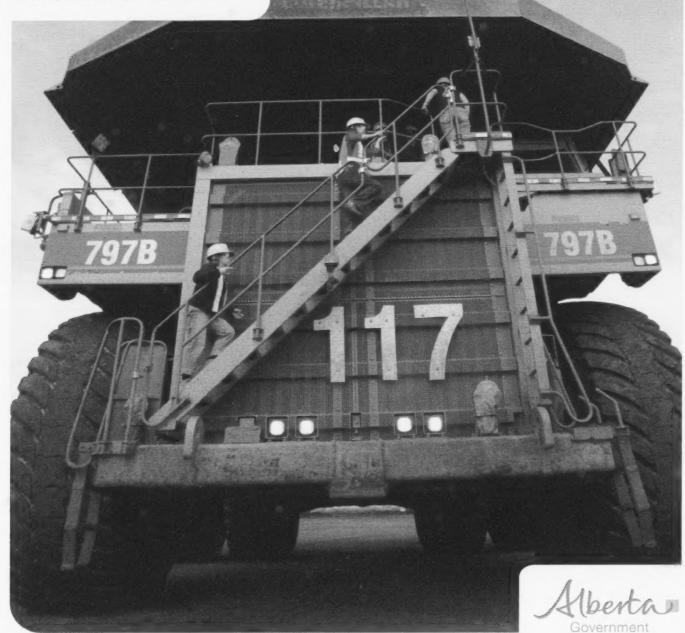


QUARTERLY UPDATE

WINTER 2013

Reporting on the period: Sep. 18, 2013 to Dec. 05, 2013



All about the oil sands

Background of an important global resource

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Canada has the third-largest oil reserves in the world, after Saudi Arabia and Venezuela. Of Canada's 173 billion barrels of oil reserves. 170 billion barrels are located in Alberta, and about 168 billion barrels are recoverable from bitumen. This is a resource that has been developed for decades but is now gaining increased global attention as conventional supplies—so-called "easy" oil—continue to be depleted. The figure of 168 billion barrels of bitumen represents what is considered economically recoverable with today's technology, but with new technologies, this reserve estimate could be significantly increased. In fact, total oil sands reserves in place are estimated at 1.8 trillion barrels.

There are three major bitumen (or oil sands) deposits in Alberta. The largest is the Athabasca deposit, which is located in the province's northeast in the Regional Municipality of Wood Buffalo. The main population centre of the Athabasca deposit is Fort McMurray. The second-largest oil sands deposit is referred to as Cold Lake, just south of Athabasca, with the main population centre the City of Cold Lake. The smallest oil sands deposit is known as Peace River, which is located in northwest-central Alberta. A fourth deposit called Wabasca links to the Athabasca and is generally lumped in with that area.

The existence of bitumen in Alberta has been known for a long time. The first mention of it in Canadian history was in 1719, when a Cree named Wapasu brought a sample of the "gum" to a Hudson's Bay trading post. First Nations in what is now the Wood Buffalo area had traditionally used the bitumen, which seeps from outcrops along the Athabasca River, to waterproof their canoes.

For the first time in 2012, in situ oil sands production exceeded mined oil sands production in Alberta. In 2012, 52 per cent of the province's oil sands volumes were produced using in situ

methods. Alberta will continue to rely to a greater extent on in situ production in the future, as 80 per cent of the province's proven bitumen reserves are too deep underground to recover using mining methods.

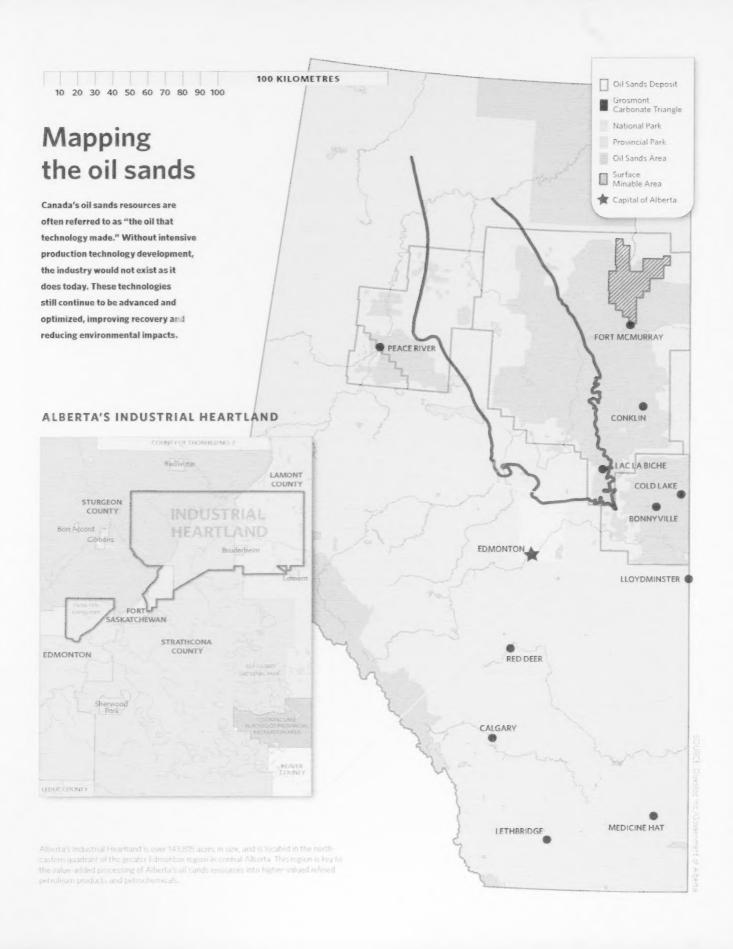
There are essentially two commercial methods of in situ (Latin for "in place," essentially meaning wells are used rather than trucks and shovels). In cyclic steam stimulation (CSS), high-pressure steam is injected into directional wells drilled from pads for a period of time, then the steam is left to soak in the reservoir for a period, melting the bitumen, and then the same wells are switched into production mode, bringing the biturnen to the surface.

In steam assisted gravity drainage (SAGD), parallel horizontal well pairs are drilled from well pads at the surface. One is drilled near the top of the target reservoir, while the other is drilled near its bottom. Steam is injected into the top well, a steam chamber forms, and the melted bitumen flows into the lower well via gravity and is pumped to the surface using artificial lift.

Both SAGD and CSS are used in the Cold Lake and Peace River deposits, while SAGD is the in situ technology of choice in the Athabasca deposit. The selection is based on a number of factors, including geology. The technologies combined currently produce just over one million barrels per day.

Research is underway on a number of other production technologies designed to optimize production, including variations on solvent-assisted SAGD and CSS, recovery using electricity and in situ combustion.

Bitumen that has not been processed, or "upgraded," can be used directly as asphalt. It must be diluted to travel by pipeline. Adding value, some producers upgrade their product into synthetic crude oil, which is a refinery feedstock. That can be transformed into transportation fuels and other products.



ALBERTA AND BRITISH COLUMBIA REACH AGREEMENT ON OPENING NEW MARKETS

Alberta Premier Alison Redford and B.C. Premier Christy Clark announced in November a framework agreement between the two provinces on moving energy resources to new markets.

"A key part of our Building Alberta Plan is getting Alberta's resources to new markets at much fairer prices so we can keep funding the programs Albertans told us matter most to them," said Redford. "[This] agreement with B.C. is good news for Alberta, for British Columbia and for all Canadians. I welcome Premier Clark's endorsement of the Canadian Energy Strategy and our shared commitment to create jobs, long-term growth and position Canada as a true global energy superpower. We look forward to continued constructive dialogue with B.C."

The framework will also see the Government of British Columbia endorse Premier Redford's Canadian Energy Strategy.

"Agreement on B.C.'s five conditions is a necessary first step before any [pipeline] proposals can be considered for approval. It is the way we do business in B.C., and it works," said Clark. "By working together with Alberta through these principles, we can grow our economies and strengthen Canada's economy overalt."

The governments of B.C. and Alberta agree that British Columbia's conditions are intended to ensure both the responsible production of energy as well as its safe transport to new markets, giving projects the social licence to proceed.

Conditions one to four are designed to achieve both economic benefit and risk mitigation on increased shipments through British Columbia. They mirror Alberta's legislated commitments on responsible energy production. Alberta and British Columbia agree that only through intensive environmental review and protection, enhanced marine safeguards and First Nations support can projects proceed.

On condition five, Alberta agrees that British Columbia has a right to negotiate with industry on appropriate economic benefits. Both governments agree it is not for the governments of Alberta and British Columbia to negotiate these benefits. Both provinces reaffirmed that Alberta's royalties are not on the table for negotiation.

ALBERTA FORTIFIES ENERGY RELATIONSHIPS WITH ASIA

Alberta and China signed an agreement in October to increase energy trade and collaboration between the two jurisdictions.

The historic Framework Agreement on Sustainable Energy Development, signed by Alberta Energy Minister Ken Hughes and China's national energy administration chief Wu Xinxiong, is a framework that seeks to set out concrete actions to strengthen trade ties.

This non-binding intergovernmental agreement is the first of its kind between the Chinese central government and a sub-national government of Canada. It's aligned with the existing Natural Resources Canada and National Energy Administration agreement.

Chinese President Xi Jinping and Canadian Governor General David Johnston also attended the signing in the Great Hall of the People in Beijing, signalling the significance of Alberta and China's future energy trade and collaboration.

BILL CREATES ENVIRONMENTAL MONITORING AGENCY

An arm's length agency will oversee environmental monitoring in Alberta.

Diana McQueen, Minister of Environment and Sustainable Resource Development, introduced Bill 31 in the Alberta Legislature in October. The Protecting Alberta's Environment Act creates the new Alberta Environmental Monitoring, Evaluation and Reporting Agency (AEMERA), responsible for operating a comprehensive, science-based monitoring system. Initially, the arm's length agency will be responsible for work currently done in the oil sands area under the Joint Oil Sands Monitoring plan, Eventually, AEMERA will be responsible for province-wide environmental monitoring, evaluation and reporting as land use plans are implemented.

The work of this agency will provide the best possible data that will be used to make the best possible decisions when it comes to responsible development of the province's natural resources. This data will detail the condition of Alberta's environment, specifically air, land, water and biodiversity.

Over the coming weeks, the Alberta government will appoint an agency chair and board members through a public application process. AEMERA is expected to start operating in early 2014.

NEW ACT HELPS ALBERTA REACH ENERGY POTENTIAL

The Alberta government is proposing legislation that will help Albertans get better prices for their energy resources.

The Building New Petroleum Markets Act will boost the government's ability to respond more quickly to changing



market conditions and empower it to proactively seek out opportunities for Alberta's energy products. The legislation allows the Minister of Energy to set the strategic priorities of the Alberta Petroleum Marketing Commission (APMC).

The APMC is responsible for selling the conventional oil that government receives in lieu of cash royalties and for implementing the Bitumen Royalty. In-Kind policy.

The proposed Building New Petroleum Markets Act with

- · Allow the Minister of Energy to provide specific direction to the APMC, based on the public interest and government priorities;
- · Modernize and improve the corporate rules under which the APMC currently operates, including giving the government the ability to appoint a board of up to seven directors instead of the current three, including expertise from outside the public service: and
- Clarify financial tools available to the APMC, which could include providing loans or making equity investments in projects, when authorized by the government.

MINISTER DALLAS WELCOMES STUDY ON PROPOSED **EUROPEAN UNION FUEL QUALITY DIRECTIVE**

Minister of International and Intergovernmental Relations Cal Dallas issued the following statement in response to the release of a study by ICF International, Inc. on the proposed European Union (EU) Fuel Quality Directive (FQD).

"This study confirms our contention that the FQD unfairly and unjustifiably discriminates against Alberta's oil sands, because it is based on a flawed and unscientific premise and poor data.

"The study shows that many of the crude oils being imported and refined in the EU today actually have greater GHG [greenhouse gas] intensities than oil sands crude. Yet these crudes are categorized in the FQD as lower intensity. Not only is this unfair, it is likely to result in higher GHG emissions in the EU, which is exactly the opposite of what the policy is purported to achieve.

"Our government agrees with the need to reduce greenhouse gas emissions. Any efforts to do so must be fair and effective, and be based on sound logic and science—a message Minister fof Environment and Sustainable Resource Development Diana] McQueen and I reinforced in meetings with EU member states during a mission to Europe earlier this fall.

"If the European Union is serious about reducing greenhouse gas emissions, then the FQD needs to apply the same standard to all crude oils and reflect the true emissions intensities of each."

NATIONAL ENERGY BOARD REPORT HIGHLIGHTS AMPLE **ENERGY SUPPLY**

The National Energy Board (NEB) released in November its report Canada's Energy Future 2013: Energy Supply and Demand

The results indicate there will be enough supply to meet Canada's growing energy needs for the foreseeable future. In fact, over the next 20 years, the NEB projects energy production levels to exceed domestic requirements, resulting in growing amounts of energy available for export.

"Canada has vast energy resources—more than enough to meet Canada's growing energy demand," said Gaetan Caron, chairman and chief executive officer of the NFB. "Canada also has one of the highest standards of living in the world, in part due to our energy resources, which are a key driver of the economy."

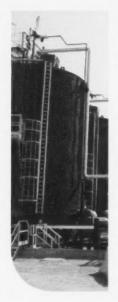
Total Canadian energy production will grow substantially between now and 2035, with oil leading the way. Oil production increases by 75 per cent. Natural gas production increases by 25 per cent. Canadian total electricity generation and supply increases over the projection period as well. Natural gas-fired power generation capacity increases substantially, largely at the expense of coal-fired capacity, and non-hydrorenewable capacity doubles its share of the capacity mix.

Canadian energy needs increase as well, but at a slower rate than the historical trend. Canadian demand for oil and natural gas increases by 28 per cent, with hydrocarbons continuing to be the primary source of energy to heat homes and businesses, transport people and goods, and many other functions that are integral to Canadians' standard of living.

Improvements in energy efficiency will mean Canadians will be using less energy in the future to produce more. By 2035, the energy used per unit of economic output is projected to be 20 per cent lower than current levels. As a result of new passenger vehicle emission standards, EF 2013 also reports the reversal of the long-term upward trend in passenger transportation energy use.

Growth in export markets and the infrastructure to access them are key uncertainties in this report's projections.

LABOUR UPDATE



LABOUR MARKET INFORMATION

Alberta's seasonally adjusted unemployment rate was 4.4 per cent in October 2013, down 0.4 percentage points from August and unchanged from the same month last year. This rate was the second lowest in Canada, behind Saskatchewan's 3.6 per cent. The national rate was 6.9 per cent, unchanged from the previous month.

Alberta continues to lead the nation in economic growth thanks largely to investment in oil sands projects. The province led quarterly employment growth across Canada, gaining 33,800 jobs on a seasonally adjusted basis. What's more, the province hasn't seen employment growth in this range since 2011. On a year-over-year basis, employment grew by 3.5 per cent or 74,400 jobs from 2012, whereas national job creation was up by a modest 1.3 per cent.

An influx of new migrants has added to the supply of labour in the province and prevented the unemployment rate from falling significantly during a period of robust job growth. In four of the last five months, employment has jumped by more than 14,000 per month.

Yet, this surge in job growth has been closely matched by entry into the labour force, as growing numbers of people look for work. As a result, despite strong monthly job gains, the unemployment rate has stayed within the 4.2 per cent to five per cent range since last spring.

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CHANGES TO THE ALBERTA IMMIGRANT NOMINEE PROGRAM

The Alberta Immigrant Nominee Program (AINP) has made an important change to the eligibility criteria of the Strategic Recruitment Stream - Post-Graduate Worker Category. Effective immediately, only applicants who have completed an eligible program of study in Alberta may apply under this category.

See the Post-Graduate Worker Calegory page for details.

CHANGES TO THE CANADIAN EXPERIENCE CLASS

Citizenship and Immigration Canada implemented several changes to the Canadian Experience Class (CEC). As part of the changes, an annual cap on the number of new CEC applications and several sub-caps specific to certain occupations have been introduced.

See the <u>Citizenship and Immigration Canada news page</u> for more information.

INTERNATIONAL MARKET FACT SHEETS

Are you recruiting internationally but have no idea where to start? Recruiting fact sheets for the <u>United States</u> and Ireland provide information on the labour supply, migration trends, credential recognition and recruitment tips to help you make informed recruitment decisions.

Contact Us:

If you have questions, concerns or require more information, contact us at ABWorkforceinfo@gov.ab.ca ■



What's new in the oil sands BUSINESS



Suncor Energy Inc. and its partners have given a unanimous go ahead for the long planned fort Hills oil sands mine, which is expected to produce 180,000 barrels of bitumen per day with start-up scheduled for the fourth quarter of 2017.

The go-forward capital investment in Fort Hills is estimated at approximately \$13.5 billion and is expected to account for approximately 15 per cent of Suncor's total capital budget on average per year.

The estimated cost of the Sturgeon Relinery, which will convert some of Alberta's royalty bitumen into diesel fuel, has ballooned to \$8.5 billion from the \$5.7 billion price tag cited when the project was sanctioned a year ago.

And project owners North West Upgrading Inc. and Canadian Natural Resources Limited have delayed their target for starting commercial operations at the 50,000-barrel-per-day facility to September 2017 from the original forecast of mid-2016.

The partners attribute the increased estimate to a combination of cost inflation and the inability to fully capture certain cost savings initiatives.

Canadian Natural Resources Limited says it completed several key milestones in the third quarter in the expansion of its integrated Horizon oil sands mine and upgrader.

Overall, Horizon Phase 2/3 construction - targeted to increase production capacity to 250,000 barrels per day of synthetic crude oil (SCO) - reached approximately 30 per cent of physical completion. Current costs continue to trend slightly below sanctioned cost estimates.

The Reliability phase is approximately 91 per cent physically complete. Phase 2A, which will add 10,000 barrels per day of additional SCO production, is approximately 70 per cent physically complete and on schedule for completion in 2015. Phase 2B, which will add 45,000 barrels per day of SCO in 2016, is approximately 20 per cent physically complete. Phase 3 - the addition of 80,000 barrels per day of SCO in 2017 - is approximately 19 per cent physically complete.

Royal Dutch Shell plc is proceeding with its Carmon Creek thermal project in the Peace River oil sands region, which is expected to produce up to 80,000 barrels of oil per day.

Shell submitted its regulatory application for Carmon Creek in 2010 and received approval from the Alberta Energy Regulator in April 2013. First oil is planned for mid-2017. Full production capacity is expected two years later.

Prosper Petroleum Ltd. has applied to the Alberta Energy Regulator to build and operate the \$390-million Rigel oil sands project, a proposed steam assisted gravity drainage (SAGD) operation about 100 kilometres northwest of Fort McMurray.

The private, Calgary-based company will operate the 10,000 barrel-per-day project. Its partner, Calgary's PetroLama Namur Oil Sands Exploration, is owned by Czech Republic-based LAMA Energy Group s.r.o. Assuming regulatory approval and favourable market conditions, construction is scheduled to begin in late 2015, with first oil in early 2017.

The first commercial project in Canada intended to tap the vast deposits of bitumen in carbonate formations has been delayed by about a year due to a need for more financing.

Start up of the Saleski commercial development in northern Alberta is now scheduled for the third quarter of 2016 instead of the third quarter of 2015, Laricina Energy Ltd. says. The company has been operating a pilot at Saleski since 2010 and has reported encouraging results.

IransCanada Corporation now expects to file an application in the first half of 2014 for its Energy East Pipeline to transport western Canadian crude to Saint John, N.B.

Although TransCanada earlier had talked about a filing in the first quarter, the company says it needs additional time to deal with more facilities and work with stakeholders before it submits the application to convert a segment of its Canadian Mainline to crude service. A strong response from shippers prompted the company to add a second marine export terminal and increase the size of the project to 1.1 million barrels per day from 800,000 barrels per day.

Canadian Natural Resources Limited says that first steam has been achieved at its 100 per cent owned and operated Kirby South SAGD project.

Kirby South is targeted to grow to approximately 40,000 barrels per day by the end of 2014 and is the first step in a staged expansion plan for the greater Kirby area, targeted to increase Kirby area production over time to approximately 140,000 barrels per day.

Savanna Energy Services Corp. and Fort McKay First Nation have agreed to form Fort McKay Savanna Energy Services LP.

The jointly owned company will provide a range of services to the oil sands sector, including drilling, coring and well servicing, in addition to offering equipment rentals in the Regional Municipality of Wood Buffalo area.

What's new in the oil sands

TECHNOLOGY



Royal Dutch Shell plc's newly sanctioned 80,000 -barrelper-day Carmon Creek thermal project has been designed to be both commercially viable and minimize environmental impacts, the company says. This design includes a novel well-delivery system and 650 megawatts of cogeneration—500 megawatts of which will likely be sold back to the grid. Once the project is up and running, the aim is to virtually eliminate the use of freshwater in steam generation by recycling water produced with the oil.

Shell says it is taking a well manufacturing approach to drill and complete the wells using the Sirius Well Manufacturing Services joint venture. This approach is based on standardization of components, which allows quicker and repeatable operations that provide opportunities to reduce costs.

Canada's Oil Sands Innovation Alliance (COSIA) has updated its stakeholders and the public on its performance since inception almost two years ago.

COSIA and its 13 member companies have collectively created new legal agreements that allow member companies to collaborate at unprecedented levels and developed planning frameworks for each of COSIA's Environmental Priority Areas (EPAs) that allow companies to identify new projects best able to deliver environmental performance improvement.

To date, COSIA's member companies have shared 560 technologies worth a total of \$900 million. Its member companies are now actively working on 185 joint industry projects worth \$500 million across COSIA's four EPAs—land, water, tailings and greenhouses gasses.

First production has been achieved at a hydrogen pilot plant in Fort Saskatchewan, Alta.

Operated by Western Hydrogen Ltd., the plant uses a process called molten salt gasification (MSG) to produce hydrogen. Unlike the current hydrogen production method of steam methane reforming, MSG can produce hydrogen from not only natural gas, but also other feedstocks, including renewables.

"As a key ingredient to convert oil sands bitumen into synthetic crude, hydrogen is an important component to Canada's sustainable and prosperous future," says Vicky Sharpe, president and chief executive officer of Sustainable Development Technology Canada, one of the project funders. "The innovative MSG technology reduces the overall footprint of oil sands production, something producers are striving for and consumers and export markets are increasingly demanding."

The company says it will begin to accelerate the development and commercialization of the technology, and is currently in talks with current and prospective partners.

Industry in the Athabasca oil sands region will now have access to a database of wildlife species habitats in the area.

The Cumulative Environmental Management Association (CEMA) built the database out of habitat models used in environmental impact assessments (EIAs), supplementary information requests and closure planning phases on oil sands projects dating back to 1990.

The organization says the project was initiated to address uncertainty surrounding validated and unvalidated habitat models used in EIAs and other documents. It draws upon a study completed by CEMA's wildlife task group in 2011, which looked at synthesizing habitat models used in the region.

"Twenty-two oil sands operations EIAs and 228 species habitat models in the EIA documents were reviewed, and the results have been compiled into this new database that will assist those operating and living in the oil sands region," says Lorne Gould, chair of the wildlife task group at CEMA.

The database is available on CEMA's website at cemaonline.ca.

 \mathbb{Z} CO₂ Solutions Inc. says it has demonstrated that its patented enzyme-enabled carbon-capture technology uses at least one-third less energy than existing methods and can withstand the rigours of industrial application.

The company, based in Quebec City, will now proceed to the large-bench scale testing phase of one-half tonne per day of CO_2 capture wherein the same performance metrics will be validated under flue gas conditions.

Following successful large-bench validation, the project will move to field pilot-scale testing (approximately 15 tonnes per day of CO₂ capture) in 2014.

The company says its testing captured 90 per cent of the ${\rm CO_2}$ emissions from natural gas combustion at a typical in situ oil sands operation.

The 33 per cent reduction was achieved without any process optimization, and further savings are expected upon optimization and operational integration in later phases, CO_2 Solutions says.

III GE Canada is partnering with Canada's Oil Sands Innovation Alliance (COSIA) to focus on reducing greenhouse gas emissions and water consumption in the oil sands.

The joint projects will be based out of GE's Global Heavy Oil Centre of Excellence in Calgary. In order to support the initiative, the company says it will be hiring up to 15 process and solution engineers at the facility.

Details on the projects will be released in the coming months.

OIL SANDS PROJECT TECHNOLOGY GUIDE

CSS-CYCLIC STEAM STIMULATION

CSS involves injecting high-pressure steam into the reservoir for several weeks, followed by several weeks where the reservoir is left to "soak," The heat softens the bitumen and the water dilutes and separates the bitumen from the sand. The pressure creates cracks and openings through which the bitumen can flow back into the steam injector wells, which are converted to production mode.

ET-DSP-ELECTRO-THERMAL DYNAMIC STRIPPING (EMERGING)

ET-DSP combines the majority of the dominant heat transfer mechanisms to heat and mobilize bitumen in situ. Electrodes are placed in a grid configuration and a production well is located within the centre of each series of electrode wells. The technology has been commercially applied for soil remediation and is expected to reduce greenhouse gas emissions and water use.

N-SOLV (EMERGING)

N Solv involves the injection of pure, heated solvent vapour into an oil sands reservoir where it condenses, delivering heat to the reservoir and subsequently dissolving the bitumen, with the resulting miscible figuids flowing by gravity to a production well. It is designed to accelerate extraction rates and reduce greenhouse gas emissions.

PRIMARY PRODUCTION—COLD HEAVY OIL PRODUCTION WITH SAND

Cold heavy oil production with sand (CLIOPS) is a non-thermal in situ primary production technology that involves the continuous production of sand using progressing cavity pumps to enhance recovery

SAGD-STEAM ASSISTED GRAVITY DRAINAGE

SAGD employs two parallel horizontal wells: one injection well near the top of the reservoir, through which high-pressure steam is continuously injected, and one production well near the bottom of the reservoir into which the softened bitumen continuously flows and can be pumped to the surface. SAGD surface facilities include steam generation, water processing and bitumen treatment. Multiple operators are also now working with solvent co-injection in SAGD to increase recovery and reduce natural gas and water requirements.

SURFACE MINING

Trucks take oil sand to crushers where it is prepared for extraction. Crushed oil sand is mixed with warm water and led through a hydro-transport system to an extraction plant where the mixture of oil, sand and water is placed in separation vessels. Injected air forms tiny bubbles that separate bitumen from the sand and floats it to the tank surface where it forms a thick froth that is skimmed off, mixed with naphtha and spun in a centrifuge to remove the remaining solids, water and dissolved salts. The cleaned sand and the water are then sent to the tailings area where the water is recycled back to the extraction process.

TAGD—THERMAL ASSISTED GRAVITY DRAINAGE (EMERGING)

TAGD is a process being developed for the in situ recovery of bitumen from carbonate formations. TAGD uses an array of downhole heaters installed in horizontal wells to heat the reservoir via thermal conduction.

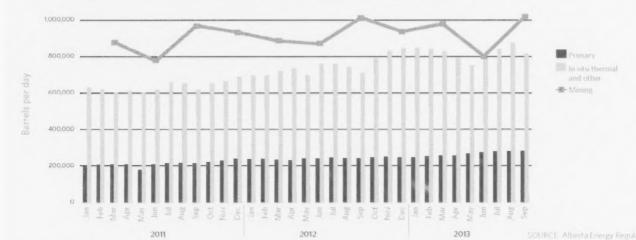
THAI-TOE TO HEEL AIR INJECTION (EMERGING)

THAI uses a vertical air injection well with a horizontal production well. Rather than steam, THAI technology injects air and then relies on underground combustion of a portion of the oil in the ground to generate the heat required to melt the remainder of the bitumen and allow it to flow into the production well. The process is intended to reduce greenhouse gas emissions and water use.

UPGRADING

Once bitumen is produced, it is sent for further upgrading, a process that breaks down the heavy carbon molecules and converts it into a product similar to conventional crude oil. This can be processed by refiners into value-added products.

Alberta Oil Sands Production by Extraction Method



Project listings

Updated status of oil sands projects in Alberta As of December 2013

CURRENT PROJECT	CAPACITY	START-UP	REGULATORY STATUS	CURRENT
NORTH ATHABASCA REGIO	N - MINING			Aurora
CANADIAN NATURAL RESOURCES LIMITE		Wildestein de		Auroro
Horizon				Mildred
Canadian Natural says that operating perform	nance at Horzon has been	strong since the cor	nnany executed its first	TECK RESO
major turnaround in May 2013. Horizon SCO	production in the third qua	rter was approxima	tely 112,000 barrels per	Frontie
day. The overall phased expansion to 250,00 in that expansion, Reliability, 91 per cent physical expansion.				The Canadi
				to be appro project upd
Phase 1	135,000	2008	O NOTICE OF STREET	Phase 1
Reliability Tranche 2	5,000	2014		Phase 2
Phase 2A	10,000	2015	MOLIGIA SILATE	Phase 3
Phase 2B	45,000 80,000	2016		Phase d
Phase 3	80,000	2017	The second secon	TOTALES
IMPERIAL OIL LIMITED				Joslyn
Kearl				Project part
Imperial Oil says that all three paraffinic both to Diluted billumen has been successfully run in to				when it is n
to unrelated parties commenced. Full-capacity				Phase 1
Kearl is about 58 per cent complete.				NORTH
Ptrase-1	110,000	2013	Dientes -	ATHABAS
Phase 2	110,000	2015	The second state of	Birch
Phase 3	80,000	2020	Augusta	Athabasca
Phase 4 Debottleneck	45,000	1BD	- Across	access infra
SHELL ALBIAN SANDS		in the second	NO SECTION	Phase 1
Jackpine				Dovert
The federal joint review panel has issued con-				
project will go through the Alberta regulatory	process and obtain approv	ral from the federal	environment minister.	A fourth pri
Phase 1A	100,000	2010	Ordello	
Phase 1B	100,000	TBD	Approved	Phase I
Expansion	100,000	2017	Appear	Phone :
Musling Rivor				Down
Minority partner Marathon Oil Corporation sa	ys the Athabasca Oil Sands	Project has recently	shown "outstanding" per-	Athabasca
formance due to robust reliability and realizati	ons, but is expecting signific	ant planned downti	me in the fourth quarter.	Physic 1
Commercial	155,000	2002		Phase 7
Expansion & Debottlenecking	115 0000	TBD	Association and the second	Phase:
Pierre River				Phone
A joint review panel of the Canadian Environ	mental Assessment Agenc	and Alberta Energ	y Regulator has com-	Phase 5
menced a public comment period on addition			stions stemming from	BP P.L.C.
the last public comment period. Comments a				Terre d
Phase I	100,000	2018		BP says that
Phase 2	100,000	TBD		Pilot
SUNCOR ENERGY INC.				BRION ENE
Base Operations				Dover
Suncor says that production was reduced in				The Fort Mc
vacuum tower and related units, which was s tion of major planned maintenance activit				bused on the
			Total Committee and a	Dovert
Millennium Mine Steepbank Debottleneck Phase	294,000	1967		Dover!
				Dover :
Millemiam Debottlenecking	23,000	2008		Dover :
North Steephank Extension	180,000	2012		Dover '
Fort Hills				MacKa
Suncor and its partners have sanctioned the			-	Brion Energ
Phase 1	160,000	2017	Color Statistics	done, procu
Dehottleneck	20,000	TED	Approval	with South
Voyageur South				Phase 1
Suncor considers Voyageur South to be a "lor	nger-term" project and has	not confirmed a sta	rt-up date	Phase 7
Phase 1	120,000	TBD	1507.00	Phase 3
SYNCRUDE CANADA LTD.	The state of the state of the state of	11 32 16		Phase 4
Mildred Lake/Aurora	1-5-5			CANADIA
The proposed terms of reference for Syncrude's	Mildred Lake Extension (M	(X) project are now i	ivailable for public com	Birch M
The second of the second of the second of the second		Proposition in the same		Canadian N
ment until November There: http://environmen	Lalberta.ca/02313.html.			
ment until November 1 here: http://environmen Base Mine Stage 1 & 2 Expansion	290,700	1978	10000000	Phase 1

CURRENT PROJECT	CAPACITY	START-UP	REGULATORY STATUS
Aurora South Train I	100,000	2016	TO A COLUMN
Auroro South Train 2	100,000	2018	Appeared
Mildred Lake Mine Extension (MLX)	TBD	2023	A statement
TECK RESOURCES LIMITED	Activities Manne Barry		13.575
Frontier			
The Canadian Environmental Assessment Agen to be approximately two years, so 2015 would b project update available in the fourth quarterw			
Phase 1	74,600	2021	mag Caron
Phase 2	84,000	2024	Arratemen
Phase 3	79,300	2027	
Phase 4 Equinos	39,400	2030	
TOTAL EXPCANADA LTD			
Joslyn North Mine			
Project partner Suncor Energy Inc. mays an updat when it is ready.	ted finning for the Joslyn	sanction decision w	(II be made available
Phase I	100,000	2021	Market St.
NORTH ATHABASCA REGION		1011	100000000000000000000000000000000000000
ATHABASCA DIL CORPORATION			
Birch		No. of Concession, Name of Street, or other Designation, Name of Street, or other Designation, Name of Street,	
Athabasca says its work at Birch currently relate	e to combitee complian	on and poliminary	enimonies on future
access infrastructure. The company is currently			
Phase 1	12,000	TBD	Service of
Dover West Carbonates (Leduc)			
A fourth production cycle for the TAGD pilot tes encouraged by results so far.	t is scheduled for the for	arth quarter of 2013	Athabasca had been
Phase I Demonstration	6,000	2016	
Phase 2 Demonstration	6,000	TBD	
Dover West Sands & Clastics			
	16 - H - P 1M	15-1-0	
Athabasca Oil is currently awaiting regulatory at			-
Physic 1	12,000	2016	
Phase 2	35,000	2019	
Phase 3	35,000	2020	
Please 4	35,000	2022	
Phase 5 BPPLC	35,000	2024	HIRLANDE
Terre de Grace			TAX DESCRIPTION
BP says that ongoing appraisal activities include of			praeator water source
Pilot	10,000	TBD	
BRION ENERGY CORPORATION			
Dover			
The Fort McKay First Nation has been granted leave based on the First Nation's desire to have a buffer zo	50,000	2016	EDISH RETURN
bused on the First Nation's desire to have a buffer zo	50,000	2018	
based on the First Nation's desire to have a buffer zo Dover North Phase 1	50,000	2021	
based on the First Nation's desire to have a buffer at Dover North Phase 1 Dover North Phase 2			
based on the First Nation's desire to have a buffer zo Dover North Phase 1	50,000	2023	
based on the First Nation's desire to have a buffer of Dover North Phase 1 Dover North Phase 2 Dover Youth Phase 3	50,000	2023	Automatical Automa
based on the First Nation's desire to have a buffer zo Dover North Phase 1 Dover North Phase 2 Dover South Phase 3 Dover South Phase 4			All
based on the First Nation's desire to have a buffer at Dover North Phase 1 Dover North Phase 2 Dover South Phase 3 Dover South Phase 4 Dover South Phase 5 MacKay River	50,000	2025	e drilling is 48 res
based on the First Nation's desire to have a buffer as Dover North Phase 1 Dover North Phase 2 Dover South Phase 3 Dover South Phase 4 Dover South Phase 5 MacKay River Bion Energy says the first phase of the project's done, procurement is at 55 per cent and 34 per-	50,000 detailed engineering is 8 cent of construction has	2025 64 per cent complet	
based on the First Nation's desire to have a buffer as Dover North Phase 1 Dover North Phase 2 Dover South Phase 3 Dover South Phase 4 Dover South Phase 5 MacKay River Bion Energy says the first phase of the project's done, procurement is at 55 per cent and 34 per-	50,000 detailed engineering is 8 cent of construction has	2025 64 per cent complet	
based on the First Nation's desire to have a buffer as Dover North Phase 1 Dover North Phase 2 Dover South Phase 3 Dover South Phase 4 Dover South Phase 5 MacKay River Bion Energy says the first phase of the project's done, procurement is at 55 per cent and 34 per-	50,000 detailed engineering is 8 cent of construction has	2025 64 per cent complet	
based on the First Nation's desire to have a buffer as Dover North Phase 1 Dover North Phase 2 Dover South Phase 3 Dover South Phase 4 Dover South Phase 5 MacKay River Brion Energy says the first phase of the project's done, procurement is at 55 per cent and 34 per with Southern Pacific Resources Corp., has been	50,000 detailed engineering is 8 cont of construction has completed.	2025 84 per cent complet been finished. The r	
based on the First Nation's desire to have a buffer at Dover North Phase 1 Dover South Phase 3 Dover South Phase 4 Dover South Phase 5 MacKay River Brion Energy says the first phase of the project's done, procurement is at 55 per cent and 34 per with Southern Pacific Resources Corp., has been Phase T	50,000 detailed engineering is 8 cont of construction has completed.	2025 54 per cent complet been finished. The r 2015	
based on the First Nation's desire to have a buffer at Dover North Phase 1 Dover North Phase 2 Dover South Phase 4 Dover South Phase 5 MacKay River Brion Energy says the first phase of the project's done, procurement is at 55 per cent and 34 per with Southern Pacific Resources Corp., has been Phase 1 Phase 2	50,000 detailed engineering is 8 cont of construction has completed. 35,000 40,000	2025 54 per cent complet been finished. The r 2015 2018	
based on the First Nation's desire to have a buffer of Dover North Phase 1 Dover South Phase 2 Dover South Phase 4 Dover South Phase 5 MacKay River Brion Energy says the first phase of the project's done, procurement is at 55 per cent and 34 per- with Southern Pacific Resources Corp., has been Phase 1 Phase 2 Phase 3	50,000 detailed engineering is 8 seem of construction has completed. 35,000 40,000	2025 54 per cent complet been finished. The r 2015 2018 2020	
based on the First Nation's desire to have a buffer of Dover North Phase 1 Dover North Phase 2 Dover South Phase 3 Dover South Phase 4 Dover South Phase 5 MacKey River Brion Energy says the first phase of the project's done, procurement is at 55 per cent and 34 per with Southern Pacific Resources Corp., has been Phase 1 Phase 2 Phase 3 Phase 4	50,000 detailed engineering is 8 seem of construction has completed. 35,000 40,000	2025 54 per cent complet been finished. The r 2015 2018 2020	
based on the First Nations device to have a buffer at Dover North Phase 1 Dover North Phase 2 Dover South Phase 3 Dover South Phase 4 Dover South Phase 5 MacKey River Brion Energy says the first phase of the project's done, procurement is at 55 per cent and 34 per with Southern Pacific Resources Corp., has been Phase 1 Phase 2 Phase 3 Phase 4 CANADIAN NATURAL RESOURCES LIMITED Birch Mountain	50,000 detailed engineering is 8 cent of construction has completed. 35,000 40,000 40,000 35,000	2025 54 per cent complet been finished. The r 2015 2018 2020	
based on the First Nation's desire to have a buffer at Dover North Phase 1 Dover North Phase 2 Dover South Phase 3 Dover South Phase 4 Dover South Phase 5 MacKey River Bloon Energy says the first phase of the project's done, procurement is at 55 per cent and 34 per with Southern Pacific Resources Corp., has been Phase 1 Phase 2 Phase 3 Phase 3 Phase 4 CANADIAN NATURAL RESOURCES EIMITED	50,000 detailed engineering is 8 cent of construction has completed. 35,000 40,000 40,000 35,000	2025 54 per cent complet been finished. The r 2015 2018 2020	

	CAPACITY	START-UP	STATUS
CENOVUS ENERGY INC. East McMurray			
Cenovus says this project remains part of its portfoli Phase 1	ic of long-term devel 30,000	opment opportunit TBD	ies.
Steepbank	30,000	180	
Cenovus says this project remains part of its portfoli	io of long-term devel	opment opportunit	ies.
Phase I	30,000	TBD	Archinesi
Telephone Lake			
Cenovus says its dewatering pilot project designed t			
top of the oilsands deposit at Telephone Lake has be cent of the top water, replacing it with air. The comp			
Physic A	45,000	TBD	Application
Phase B	45,000	TBD	
E-T ENERGY LTD.	是一位。	MALTERIA	SPACE OF S
Poplar Creek			
E-T Energy recently held an auction, auctioning off it			
facility. The company and its project is impacted by leases surrounding Fort McMurray, as well as the ne			cancel several oilsands
Experimental Pilot	1,000	2012	- Leukelia
Phase 1	10,000	TBD	
Phase 2	40,000	TBD	
GRIZZLY OIL SANDS ULC	Carlos de la Section de la Carlos de la Carl		MARIE STATE
Thickwood			
Grizzly filed the regulatory application for the Thicky			
Phase 1	6,000	2017	
Phase 2	6,000	TBD	- Approxima
HUSKY ENERGY INC.	A PARTY AND A STATE OF THE PARTY AND A STATE O	The state of the s	
Saleski Husky filed the regulatory application for its Saleski	nilal in out. M	13	
Carbonate Pilot	3,000	2017	
Sunrise		2011	
Husky says the first phase of Sunrise is approximately	80 per cent complet	e as it advances to	ward initial production in
late 2014. In the third quarter, work continued on the	central processing fac	ility with all modul	e labrication completed
and major equipment installed. Commissioning is und for completion by the end of the year. Construction of			
Phase T	60,000	2014	Espace State 2017
Phase 2A	70,000	2018	
Phase 28	70,000	2020	
service to the service of the servic		200	
IMPERIAL OIL LIMITED			
Aspen			
Aspen Imperial Oil has filed the proposed terms of reference			Limpart assessment will
Aspen Imperial Oil has filed the proposed terms of reference Alberta Environment, Public review and comment w	ill be accepted until (October	Limpart assessment with
Aspen Imperial Oil has filed the proposed terms of reference Alberta Environment. Public review and comment w Phase 1	ill be accepted until 0 45,000	October TBD	(impact assessment will
Aspen Imperial Oil has filed the proposed terms of reference Alberta Environment. Public review and comment w Phase 1 Phase 2	ill be accepted until 0 45,000 45,000	October TBD IBD	Limpart assessment with
Aspen Imperial Oil has filed the proposed terms of reference Alberta Environment. Public review and comment w Phase 1 Phase 2 Phase 3	ill be accepted until 0 45,000	October TBD	(impart assessment with
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Aspen Imperial Oil has filed the proposed terms of reference Alberta Environment. Public review and comment w Phase 1 Phase 2 Phase 3	45,000 45,000 45,000	TBD (BD TBD	Artemani Francisco
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Aspen Imperial Oil has filed the proposed terms of reference Alberta Environment. Public review and comment we Phase 1 Phase 2 Phase 3 IVANHOE ENERGY INC. Tamarack Ivanhoe Energy has received a letter of non-objection project. The company says it has now successfully see that filed statements of concern and continues cays it anticipates "regulatory clarity" by the end of Phase 1 Phase 2 MARATHON OIL CORNORATION Birchwood Marathon tiled its regulatory application in 2012. Rependence of the property of the continued of the phase 2 MARATHON OIL CORNORATION Birchwood Marathon tiled its regulatory application in 2012. Rependence of the phase 1 Phase 2 Phase 2 MARATHON OIL CORNORATION Birchwood Marathon tiled its regulatory application in 2012. Report of the phase 1 Silver Willow Energy LTD. Lewis The AER and Alberta Environment have approved O Pilot PROSPER PET ROLEUM ETD. Riget Prosper Petroleum filed its regulatory application for Phase 1 SILVERWILLOW ENERGY CORPORATION Audet Silver Willow's engineering consultants have complete proposed Audet SACO project. The preliminary capital intensity of just under \$46,000 per calendar day of bits required environmental studies and plans to submit a regine environmental stud	will be accepted until (45,000 45,000 45,000 45,000 in from the Mikisew (ecured letters of non fiforts to resolve the 1 2013 20,000 20,000 20,000 in Foint's Lewis proj. (12,000 in Foint's Lewis proj. (1720 in Foi	Doctobes TBD	garding the Tamarack of the seven stakeholds of concern Ivanhoe are expected in 2013. The seven stakeholds of concern Ivanhoe are expected in 2013. The seven stakehold of the million in the seven stakehold of the million in the seven stakehold of the million in the seven se
Aspen Imperial Oil has filled the proposed terms of referent Alberta Environment. Public review and comment with Phase 1 Phase 2 Phase 3 IVANHOE ENERGY INC. Tamarack Ivanhoe Energy has received a letter of non-objection project. The company says it has now successfully senthal filled statements of concern and continues cays it anticipates "regulatory clarity" by the end of Phase 1 Phase 2 MARATHON OIL CORPORATION Birchwood Marathon filled its regulatory application in 2012. Recommendation OAK POINT ENERGY LTD. Lewis The AER and Alberta Environment have approved OPilot PROSPER PET ROLEUM LTD. Rigel Prosper Petroleum filled its regulatory application for Phase 1 SILVERWILLOW ENERGY CORPORATION Audit Silver Willow's engineering consultants have complete topopoed Audie 15AGD project. The prefirmancy capital intensity of juntor 14AGOD per calendar day of bit required environmental studies and plans to submit a rigid. SOUTHERN PACIFIC RESOURCE CORP. STP-McKey	will be accepted until (45,000 45,000 45,000 45,000 as from the Mikisew (ecured letters of non floots to resolve the factors of non floots to resolve the factors (20,000 20,000 as Point's Lewis proj. 1,720 at the Rigid SAGD proj. 1,720 at the preliminary engil cod estimate for the umen production. Silve egulatory application. 12,000 at STP, McKay with provenments on the with provenments on the with the provenments of the with the wit	Detables TBD	garding the Tamarack e of the seven stakeholds of concern Ivanhoe of concern Ivanhoe are expected in 2013. Item to cost \$65 million implying a capital roces, of completing the urth quarter of 2013 day for the month of any says it elected for

CURRENT PROJECT	CAPACITY	START-UP	REGULATORY STATUS
Phase 1	12,000	2012	Control by
Phase 1 Expansion	6,000	2016	
Phase 2A	12,000	2018	
Phase 2B	6,000	2018	
SUNCOR ENERGY INC.	A LUMBERTHE TO LOCATE W	and the same of th	
Dover			
N-Solv says hot oil is currently being circul the producer well. Propane or butane inject quarter of 2014. Operations will continue u	tion on the solvent-only prod		
Demonstration Plant	500	2013	
Firebag			
Suncor says that bitumen production at Fire over the prior-year quarter to 152,700 barro company says it remains on track to reach t	h per day from 113,000 barre	Is per day in the third	quarter of 2012. The
Stage 1	35,000	2004	Sometime .
Stage 2	35,000	2006	Contact to
Cogeneration and Expansion	25,000	2007	
Stage 3	42,500	2011	
Stage 4	42,500	2012	
Stage 5	62,500	2018	I Alleria
Stage 6	62,500	2019	Applicate
Stage 3-6 Debottleneck Lowis	23,000	TBD	Application
Phase 1	40,000	TBD	or Areas
Phase 2 MacKay River	40,000	TBD	- New York
Suncor says MacKay River production volu compared to 17,000 barrels per day in the			
and the third-party cogeneration unit in the tion for the MacKay River expansion and in cent over the next two years through debo	the meantime expects to in	pany continues to m	ove toward a 2014 sanc-
fion for the MacKay River expansion and in cent over the next two years through debo	the meantime expects to in ttlenecking.	pany continues to m crease production by	ove toward a 2014 sanc-
fion for the MacKay River expansion and in cent over the next two years through debo Phase 1	the meantime expects to in ttlenecking. 33,000	pany continues to m crease production by 2002	ove toward a 2014 sanc-
tion for the MacKay River expansion and in cent over the next two years through debo	the meantime expects to in ttlenecking.	pany continues to m crease production by	ove toward a 2014 sanc-
tion for the MacKay River expansion and in cent over the next two years through debo Phase 1 Debottleneck	the meantime expects to in ttlenecking. 33,000 5,000	pany continues to m crease production by 2002 TBD	ove toward a 2014 sanc-
tion for the MacKay River expansion and in cent over the next two years through debut Phase 1 Debottleneck MR2	the meantime expects to in ttlenecking. 33,000 5,000	pany continues to m crease production by 2002 TBD	ove toward a 2014 sanc-
Iton for the MacKay Wiver expansion and in cent over the next (we years through debo Phase 1 Debottleneck MR2 SUNSHINE OILSANDS LTD.	the meantime expects to in ttlenecking. 33,000 5,000	pany continues to m crease production by 2002 TBD	ove toward a 2014 sanc-
Iton for the MacKay Wiver expansion and in conflower the next (wo years through debo Plasse 1 Debottleneck MR2 SUNSHINE OILSANDS LTD. Harper	the meantline expects to in the necking. 33,000 5,000 70,000	pany continues to m rease production by 2002 TBD 2017	ove toward a 2014 sanc-
Iton for the MacKay Wiver expansion and in cent over the next two years through debo Phase 1 Debottleneck MR2 SUNSHINE OLISANDS LTD. Harper Carbonate Pilot Legand Links	the meantime expects to in titlenecking. 33,000 5,000 20,000 1,000 ast 10,000-barrel per-day pt	pany continues to m rease production by 2002 TBD 2017 TBD hase is expected late	ove toward a 2014 sanc- approximately 20 per
tion for the MacKay Wiver expansion and in conflower the next (wo years through debo Phase 1 Debottleneck MR2 SUNSHINE OILSANDS LTD. Harper Carbonate Pilot	the meantime expects to in titlenecking. 33,000 5,000 20,000 1,000 ast 10,000-barrel per-day pt	pany continues to m rease production by 2002 TBD 2017 TBD hase is expected late	ove toward a 2014 sanc- approximately 20 per
Iton for the MacKay Wiver expansion and in cent over the next two years through debo Phase 1 Debottleneck MR2 SUNSHINE OILSANDS LTD. Harper Carbonate Pilot Legand Lake Sunshine says regulatory approval for the 6 is completing field work for its environmen	the meantime expects to in titlenecking. 33,000 5,000 20,000 1,000 usst 10,000-barrel per-day pt tal analysis, which will support	pany continues to m rease production by 2002 TBD 2017 TBD TBD anse is expected late rt work for significant	ove toward a 2014 sanc- approximately 20 per
tion for the MacKay Wiver expansion and is cent over the next two years through debot Phase 1 Debottleneck MR2 SUNSHINE OILSANDSLTD. Harper Carborate Pilot Legend Links Sunshine susys regulatory approval for the is completing field work for its environment Phase A1	the meantime expects to in titlenecking. 33,000 5,000 20,000 1,000 inst 10,000-barrel per-day pt tal analysis, which will suppe	pany continues to m rease production by 2002 TBD 2017 TBD 180 TBD 2017 2016	ove toward a 2014 sanc- approximately 20 per
tion for the MacKay Wiver expansion and is cent over the next two years through debot Phase 1. Debottlenesk MR2 SENSHINE CILSANDS LTD. Harper Carbonate Pilot Legend Laka Sunshine says regulatory approval for the to is completing field work for its environment Phase A1. Phase A2.	the meantime expects to in titlenecking. 33,000 5,000 20,000 1,000 inst 10,000-barrel per-day pl tal analysis, which will suppo 10,000 30,000	pany continues to m rease production by 2002 TBD 2017 TBD TBD asse is expected late vt work for significant 2016 TBD	ove toward a 2014 sanc- approximately 20 per
Iton for the MacKay Wiver expansion and in- cent over the next two years through debo Place 1 Debottlenesk MR2 SUNSHING OILSANDS LTD. Harper Carbonate Pilot Legend Liska Sunshine says regulatory approval for the 1 Scompleting field work for its environmen Phase A1 Phase A2 Phase B1	the meantime expects to in titlenecking. 33,000 5,000 20,000 1,000 inst 10,000-barrel per-day pt fall analysis, which will support to 10,000 30,000 30,000	pany continues to m rease production by 2002 TBD 2017 TBD 18D hase is expected late if work for significan 2016 TBD TBD	ove toward a 2014 sanc- approximately 20 per
Iton for the MacKay Weer expansion and incent over the next two years through debot Place 1. Debottlenesk MR2 SUNSHINE OILSANDS LTD. Harper Carbonate Pilot Legend Lika Sunshine says regulatory approval for the 1s completing field work for its environment Phase A2. Phase B1 Phase B2 Thickwood Sunshine says regulatory approval is antic commission of the 1st phase B2. Thickwood Sunshine says regulatory approval is antic commission of reference with Alberta Environment is antic commission.	the meantime expects to in titlenecking. 33,000 5,000 20,000 1,000 inst 10,000-barrel per-day pt fall analysis, which will supper 10,000 30,000 30,000 ipated in the third quarter of	pany continues to as rease production by 2002 TBD 2017 TBD 2017 TBD assets expected late at work for significan 2016 TBD TBD TBD TBD 12013. TBD TBD 12013. The company	over toward a 2014 sun- approximately 20 per in 2013. The company of commercial expansion.
tion for the MacKay Wiver expansion and is conflored the next two years through debo Phase 1. Debottleneck MR2 SUNSHINE CILSANDS LTD. Harper Carbonate Pilot Legand Like Sunshine says regulatory approval for the 6 is completing field work for its environmen Phase A 2. Phase B1 Phase B2	the meantime expects to in titlenecking. 33,000 5,000 20,000 1,000 inst 10,000-barrel per-day pt fall analysis, which will supper 10,000 30,000 30,000 ipated in the third quarter of	pany continues to as rease production by 2002 TBD 2017 TBD 2017 TBD assets expected late at work for significan 2016 TBD TBD TBD TBD 12013. TBD TBD 12013. The company	over toward a 2014 sun- approximately 20 per in 2013. The company of commercial expansion.
Iton for the MacKay Wiver expansion and is cent over the next two years through debo Phases 1. Debottleneck MR2. Debottleneck MR2. SUNSHINE OLEANDS LTD. Harper Carbonate Pilot Legand Lake Sunshine says regulatory approval for the tes completing field work for its environmen Phase A1. Phase A1. Phase B1. Phase B2. Thickwood Sunshine says regulatory approval is anticeterms of reference with Alberta Environmental process.	the meantime expects to in titlenecking. 33,000 5,000 20,000 1,000 asst 10,000-barrel per-day pt tal analysis, which will support to 10,000 30,000 30,000 30,000 ipaled in the third quarter of ent for a phased expansion a	pany continues to m rease production by 2002 TBD 2017 TBD 18D hase is expected late rf work for significan 2016 TBD TBD TBD TBD	over toward a 2014 sun- approximately 20 per in 2013. The company of commercial expansion.

Sunshine says that some of the work on the West Ell additional funding.	ls site has been slowed	down temporaril	y as the company seeks
Phase A1	5,000	2014	of Contractor

Phase AT	5,000	2014	
Phase A2	5,000	2014	Approved
Phase A3	30,000	2018	Alamanial
Phase B	20,000	2025	Articulated
Phase C1	30,000	TBD	Altrobroad
Phase C2	30,000	TBD	- Andrewski -

SOUTH ATHABASEA REGION -	IN SITU		
ALBERTA OILSANDS INC.		2000	
Clearwater West			

Alberta Olisands has announced its oilsands leases near the Fort McMurray airport will be cancelled, wiping out the company's Clearwater West project.

Phase 1 Pilot 4,350 TBD

FIRST FROC	4,330	TOD	
Phase 2	25,000	2016	
ATHABASCA OIL CORPORATION			
Hangingstone			

Althatascarsays that construction at Hangingstone is nearly half complete and remains on todget and on schedule for first steam in the fourth quarter of 2014.

Phase 1	12,000	2014
Phase 2	40,000	2017

	CAPACITY	START-UP	REGULATORY STATUS	CURRENT PROJECT	CAPACITY	START-UP	REGULATORY STATUS
Phase 3	35,000	2018	Along and S	Phase B	45,000	180	Accorded
BLACKPEARL RESOURCES INC.	Argusta III	The section is		Phase C	40,000	TBD	to be a
Blackrod				West Kirby			
lackPearl says that results from the SAGD p	alot continue to meet exper	talions, and comul-	alive production from the	Cenovus says this project remains part of			ies.
illot has reached 200,000 barrels of oil. Ster				Phase I	30,000	TBD	
Pilot	800	2011	The state of the s	Winefred Lake		TOD	
Phuse 1	20,000	2015	A - 5-40 /A	Phase I CNOOC LIMITED	30,000	TBD	The state of the s
Phase 2	30,000	2018	English Property				-
Phase 3	30,000	2021	Marie Communication	Long Lake Phase 1	72,000	2008	
CANADIAN NATURAL RESOURCES LIMIT		2021		Kinosis (KTA)	40,000	18D	
Gregoire Lake		NAME OF TAXABLE PARTY.		Kinosis (KTR)	40,000	TBD	
anadian Natural citys Gregoire Lake is in the	nlanning etages			CONNACHER OIL AND GAS LIMITED	40,000	100	Cally for many and
Phase 1	60,000	TBD	The second second	Great Divide			
Phase /	60,000	TBD	The same of the sa	Connacher says that at Pod 1, positive re	- No. of the last to the second		and the same of th
Grouse		100	Name of the last o	steaming. At Algar, and pump conversion			
	to the First airchafter		2017 2010	In the third quarter, Connaction shipped	90 per cent of its bitumen by rail		
Canadian Natural says Grouse is in the plann			m 2017 and 2019.	Pod One	10,000	2007	
Commercial	50,000	2018	E. Application	Algar	10,000	2010	
Kirby				Expansion 1A	12,000	180	
Canadian Natural achieved first steam at Ki November 4: Steam is currently being circu				Expansion 1B	12,000	TBD	
anadian Natural says the well response is	performing as expected an	d production is targ	eted to grow to 40,000	CONOCOPHILLIPS CANADA	A View of The Ballion	- 100	
arrels per day in the fourth quarter of 2014	1. All evaporators, steam ge	enerators and oil tre	sating vessels are in	Surmont			
service, and the first shipment of crude oil p			envered on Prov. 4, 2013.	ConocoPhillips says that on the Surmon	1.2 expansion, engineering is con	nplete, over 4,000 a	employees and conf
KS1 - Kirby South	40,000	2013	Occupied	tors are on site, and construction is about	ut 60 per cent complete. The cor	npany continues to	seek buyers for a
KNI - Kirby North	40,000	2016		significant portion of its oilsands leases company says this process will extend in		per cent stake in the	e surmont project. T
KN2 - Kirby North	60,000	2019		Pilot	1,200	1907	-
CAVALIER ENERGY INC.				Phot Phase I	27,000	2007	
Hoele				Phase 2	109,000	2015	
Cavaller owner Paramount Resources says fr				Phase 3 - Tranche t	45,000	2020	
geotechnical work and drilling of additional s approvals by mid-2014 and continues to eva		ells. The company a	intropates regulatory	Phase 3 - Tranche 2	45,000	TBD	
	10 000	2017	-	Phase 3 - Tranche 3	45,000	TBD	
Phase 1 Phase 2	35,000	TBD		DEVON CANADA CORPORATION	A SUPERIOR OF THE SECOND		
Phase 2 Phase 3			Maria Control of the	Jackfish			
	35,000	TRD					
		A STATE OF THE PARTY OF		Devon says that Jackfish 1 recently produced	uced over 40,000 barrels per da	y, exceeding namep	plate capacity. The
CENOVUS ENERGY INC.				Devon says that Jackfish 1 recently prod Jackfish 3 expansion is 80 per cent com		y, exceeding namep	plate capacity. The
			*			y, exceeding namep 2007	plate capacity. The
SENOVUS ENERGY INC. Christina Laka Cenovus says the Phase F expansion is on so		about 37 per cent o		Tackfish 3 expansion is 8C per cent com Phase 1 Phase 2	35,000 35,000	2007 2011	olate capacity. The
Christina Lake Cenovus says the Phase F expansion is on so		about 37 per cent o		Tackfish 3 expansion is 8C per cent com Phase 1 Phase 2 Phase 3	35,000	2007	olate capacity. The
Christina Lake Cenovus says the Phase F expansion is on so		about 37 per cent o		Tackfish 3 expansion is 80 per cent com Phase 1 Phase 2 Phase 3 Jackfish East	35,000 35,000 35,000	2007 2011 2015	olate capacity. The
Christine Lake Cenovus says the Phase F expansion is on so and procurement, plant construction and en	gineering work continuing.	about 37 per cent o		Jackfish 3 evpansion is 80 per sent com Phase 1 Phase 2 Phase 3 Jackfish East Expansion	35,000 35,000	2007 2011	olate capacity. The
CHROVUS ENERGY INC. Christina Lake Cenorus says the Phase F expansion is on so and procurement, plant construction and en Phase IA	gineering work continuing. (80,000	about 37 per cent of Engineering work als 2002		Tackfish 3 expansion is 80 per cent com Phase 1 Phase 2 Phase 3 Jackfish East	35,000 35,000 35,000	2007 2011 2015	plate capacity. The
Christina Lake Christina Lake Emorus says the Phase F expansion is on so and procurement, plant construction and engineering the Phase IA Phase IA	gineering work continuing, f 80,000 8,800	about 37 per cent of Ingineering work als 2002 2008		Jackfish 3 evpansion is 80 per sent com Phase 1 Phase 2 Phase 3 Jackfish East Expansion	35,000 35,000 35,000 20,000	2007 2011 2015 2018	olate capacity. The
Christine Lake Cenovus says the Phase F expansion is on so and procurement, plant construction and en Phase IA Phase IA Phase C	gineering work continuing, f 10,000 8,800 40,000	about 37 per cent of Ingineering work als 2002 2008 2011		Tackfish 3 evpansion is 80 per cent com Phase 1 Phase 2 Phase 3 Jackfish East Expansion Pike	35,000 35,000 35,000 20,000	2007 2011 2015 2018	olate capacity. The
CENCY US ENERGY LINC. Christine Lake. Cenowus says the Phase F expansion is on so and procurement, plant construction and engine IA. Phase IA. Phase B. Phase C. Phase D.	80,000 8,800 40,000 40,000	about 37 per cent of Ingineering work als 2002 2008 2011 2012		Tackfish 3 evpansion is 80 per cent com Phase 2 Phase 2 Phase 3 Jackfish East Expansion Paid Devon says the Pike project continues to	35,000 35,000 35,000 20,000 a move through the regulatory pr	2007 2011 2015 2018	plate capacity. The
CENOVUS ENERGY INC. Christina Lake Cenovus says the Phase F expansion is on so and procurement, plant construction and en Phase IA Phase IB Phase C Phase D Phase E	8,800 40,000 40,000 40,000 40,000	about 37 per cent c Ingineering work ak 2002 2008 2011 2012 2013		Jackfish 3 evpansion is 80 per cent com Phase 2 Phase 2 Phase 3 Jackfish East Expansion Paid Devon says the Pike project continues to	95,000 35,000 35,000 20,000 o move through the regulatory pr	2007 2011 2015 2018 2018	plate capacity. The
CENOVUS ENERGY INC. Christina Lake Cenovus says the Phase F expansion is on so and procurement, plant construction and en Phase IA Phase IB Phase C Phase D Phase L Optimization (Phases C.D, D)	gineering work continuing, (10,000 8,800 40,000 40,000 40,000 21,200	about 37 per cent c Ingineering work als 2002 2008 2011 2012 2013 2015		Incidich 3 evpansion is 80 per perticom Phase 2 Phase 2 Phase 3 Jackfish East Expansion Phase Devon says the Pike project continues to 1A 18	plete. 35,000 35,000 20,000 20,000 a move through the regulatory pr 35,000 35,000	2007 2011 2015 2018 2018	plate capacity. The
Christina Lake Cenorus says the Phase F expansion is on so and procurement, plant construction and engineer IA Phase IB Phase C Phase D Phase D Phase E Optimization (Phases C. D, D) Phase f	8,800 40,000 40,000 40,000 40,000 21,200 50,000	about 37 per cent of ingineering work als 2002 2008 2011 2012 2013 2015 2016		Jackfish 3 evpansion is 80 per cent com Phase 1 Phase 2 Phase 3 Jackfish East Expansion Pika Devon says the Pike project continues to 1A 18 10.	plete. 35,000 35,000 20,000 20,000 a move through the regulatory pr 35,000 35,000	2007 2011 2015 2018 2018	plate capacity. The
Christina Lake Cenorus says the Phase F expansion is on so and procurement, plant construction and engineer 1A Phase 1B Phase C Phase D Phase D COptimization (Phases C. D, D) Phase E Phase G	tineering work continuing I 10,000 8,800 40,000 40,000 21,200 50,000	about 37 per cent of ingineering work als 2002 2008 2011 2012 2013 2015 2016 2017		Jackfish 3 evpansion is 80 per cent com Phase 1 Phase 2 Phase 3 Jackfish East Expansion Pika Devon says the Pike project continues to 1A 18 1L SRIZZLY OIL SANDS ULC Algar Lake	plete. 35,000 35,000 35,000 20,000 50,000 50,000 35,000 35,000	2007 2011 2015 2018 2018 2016 2017 2018	Specification of the second of
Christina Lake Cenorus says the Phase F expansion is on so and procurement, plant construction and engineer 1A. Phase 1B. Phase C. Phase D. Phase E. Optimization (Phases C.D. D.) Phase F. Phase F. Phase F. Phase H. Fostar Crack Lenovus says (Phase F is on schedule and on	tineering work continuing 1 10,000 8,800 40,000 40,000 21,200 50,000 50,000 50,000	about 37 per cent of rigineering work als 2002 2008 2011 2012 2013 2015 2016 2017 2019	o continues for Phase G.	Tackfish 3 evpansion is 80 per cent com Phase 1 Phase 2 Phase 3 Jackfish East Expansion Pas Devon says the Pike project continues to 1A 18 10 C GRIZZLY OIL SANDS ULC	plete. 35,000 35,000 35,000 20,000 a move through the regulatory pr 35,000 35,000 35,000	2007 2011 2015 2018 2018 2016 2017 2018	Specification of the second of
ENOYUS ENERGY INC. Christina Lake enovus says the Phase F expansion is on so ind procurement, plant construction and eng Phase IA Phase IB Phase C Phase D Phase E Optimization (Phases C.D, D) Phase F Phase F Phase F Phase H Fostar Creek Lenovus says (Phase F is on schedule and on	tineering work continuing 1 10,000 8,800 40,000 40,000 21,200 50,000 50,000 50,000	about 37 per cent of rigineering work als 2002 2008 2011 2012 2013 2015 2016 2017 2019	o continues for Phase G.	Tacklish 3 evpansion is 80 per cent com Phase 1 Phase 2 Phase 2 Phase 3 Jacklish East Expansion Pase Devon says the Pike project continues to 1A 18 10. GREZZLY OIL SANDS UIC Algar Late Grizzly curporate part-owner Gullport E production and the start of ramp-up in t	plete. 35,000 35,000 35,000 20,000 a move through the regulatory pr 35,000 35,000 35,000	2007 2011 2015 2018 2018 2016 2017 2018	Specification of the second of
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Christina Lake Cenovus says the Phase F expansion is on so indigenorus says the Phase F expansion is on so indigenorus says the Phase F expansion is on so indigenorus. The Phase IB Phase C Phase E Optimization (Phases C. D. D) Phase F Phase F Phase F Phase F Phase F Phase F F expansion schedule and on omplete, and Phase F is on schedule and on omplete, and Phase F is 27 per cent complete.	tineering work continuing, I 10,000 8,800 40,000 40,000 21,200 50,000 50,000 50,000 budget with 85 per cent of ste	about 37 per cent of ingineering work als 2002 2008 2011 2012 2013 2015 2016 2017 2019	o continues for Phase G.	Tackfish 3 evpansion is 80 per cent com Phase 2 Phase 2 Phase 3 Jackfish East Expansion Pase Devon says the Pike project continues to 1A 1B 1C. GRIZZLY OIL SANDS ULGS Algar Lake Grizzly corporate part-owner Guilport E production and the start of ramp-up in t Phase 1	plete. 35,000 35,000 35,000 20,000 o move through the regulatory pr 35,000 35,000 35,000 35,000 hency expected first slearn at All, he first quarter of 2014.	2007 2011 2015 2018 2018 2016 2017 2018 2016 2017 2018	Sympton
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Christine Lake Cenovus says the Phase F expansion is on so indeprocurement, plant construction and emphase IA Phase IA Phase B Phase C Phase D Phase E Optimization (Phases C.D. D) Phase F Phase A Phase B Debuttleneck Phase C Stage 1 Phase C Phase I Phase C Phase I	bineering work continuing, I 0,000 8,800 40,000 40,000 40,000 50,000 50,000 50,000 50,000 10,000 20,000 30,000 45,000 40,000 40,000 40,000 15,	about 37 per cent of ingineering work als 2002 2008 2011 2012 2013 2016 2017 2019 2006 2007 2009 2004 2015 2016 2019 TBD to resolve facility of centering the receiving regular 2017 TBD	te Phase G is 60 per cent	Tackfish 3 evipancion is 80 per cent com Phase 1 Phase 2 Phase 3 Jackfish East Expansion Pose Devon says the Pike project continues to 1A 18 10. GRIZZLY OIL SANDS ULC Algar Labe Grizzly corporate part-owner Guilport E production and the start of ramp-up in 1 Phase 1 Phase 2 May River Grizzly corporate part-owner Guilport E applications for a 12,000-tarrel-part-day Phase 1 Phase 2 HARVEST OPERATIONS CORP. DESCAIL Harvest says that as of Sept. 30, 2013, to and first steam and production Plavest including steam for production Plavest including steam and production Plavest 12 phase 2 HUSKY ENERGY INC.	plete. 35,000 35,000 35,000 35,000 20,000 20,000 20,000 20,000 35,000 35,000 35,000 35,000 35,000 35,000 35,000 35,000 35,000 35,000 4,00	2007 2011 2015 2018 2016 2017 2018 2016 2017 2018 2014 TBD es to work toward 1 TBD	ting regulatory ling for commissions o sell its Canadian a

CURRENT PROJECT	CAPACITY	START-UP	STATUS
Construction underway. Enbridge has announce portation services. The newly constructed pipe	eline will have capacity of 40	0,000 barrels per	
project is expected in 2016, with initial volume	20,000 sarrels per day.	2016	-
Expansion Hangingstone Pilot	ALUM	25.78%	
Pilot	11,000	1999	
KOCH EXPLORATION CANADA CORPORAT		1777	
Muskwa			
Pilot	10,000	2015	
ARICINA ENERGY LTD.			
Germain			
aricina says it converted two well pairs from a hird well pair subsequent to the quarter. The ca quarter, as well as to convert additional SAGD is quarter and into 2014.	ompany expects bitumen pr	aduction from the	se well pairs in the for
Phase 1 CDP	5,000	2013	- Employed at
Phase 2	30,000	2016	
Phase 3	60,000	TBD	
Phase 4	60,000	TBD	A Alberta
Saleski			
aricing says that three of four wells were in th hird quarter, helping to actieve the highest pro- tion and start-up schedule for Phase 1 has been	oduction rates since the pilo n delayed while the compan	ot Legan operation ry seeks additiona	in 2011. The constru
Experimental Pilot	1,800	2011	
Phase 1	10,700	2016	
Phase 2	30,000	2017	Almount
Phase 3 Phase 4	60,000	2023	
Phase 5	60,000	2025	
Phase 6	60,000	TBD	
ASC ENERGY CORD. Christina Lake AFG cays that steam injection into Phase 2R v downtage of previous integration work to use reatment facilities. Phase 2B is currently antic.	well pairs commenced in the Phase 2 production to accel ipated to begin first product	third quarter MF lerate the commis	sioning of Phase 28 a
ASC ENERGY CORD. Christina Lake AFG cays that steam injection into Phase 2R v downtage of previous integration work to use reatment facilities. Phase 2B is currently antic.	well pairs commenced in the Phase 2 production to accel ipated to begin first product	third quarter MF lerate the commis	sioning of Phase 28 a
Christina Lake AFG cays that stream injection into Phase 2R videntage of previous integration work to use reatment facilities. Phase 2R is currently anticepted to camp up to initial design capacity in Phase 1 Pilot.	well pairs commenced in the Phase 2 production to accel ipated to begin first product in 2014.	third quarter MF leaste the commission in the fourth of 2008	sioning of Phase 28 a
Christina Lake AFG-raye that steam injection into Phase 2R washington of previous integration work to use rearment facilities. Phase 2B is currently anticepted for ramp up to initial design capacity is	well pairs commerced in the Phase 2 production to accel parted to begin first product in 2014. 3,000 22,000	third quarter MF lerate the commis son in the fourth o	sioning of Phase 28 a
Christina Loke AFG says that steam injection into Phase 2R vidoantage of previous integration work to use reatment scalibles. Phase 2R is currently anticepted to ramp up to initial design capacity in Phase 1 Pilot.	will pairs commenced in the Phase 2 production to accel parted to begin first product in 2014. 3,000 22,000 35,000	third quarter MF leaste the commission in the fourth of 2008	sioning of Phase 28 a
Christina Loke AFG cays that steam injection into Phase 2R vidualities of previous integration work to use reatment facilities. Phase 2R is currently anticepted to ramp up to initial design capacity in Phase 1 Pilot. Phase 2A	well pairs commerced in the Phase 2 production to accel parted to begin first product in 2014. 3,000 22,000	thirt quarter MF legate the commission in the fourth of 2008 2009	sioning of Phase 28 a
Christina Lake AFG cays that steam injection into Place 2R vidualities of previous integration work to use reatment facilities. Phase 2R is currently anticepted to ramp up to initial design capacity in Phase 1 Pilot. Phase 2A Phase 2B	will pairs commenced in the Phase 2 production to accel parted to begin first product in 2014. 3,000 22,000 35,000	ethird quarter MF lerate the commission in the fourth of 2008 2009 2013	sioning of Phase 28 o
Christina Lake AFG cays that steam injection into Phase 2R vidualities of previous integration work to use reastment busilies. Phase 2B is currently anticepted to ramp up to initial design capacity in Phase 1 Pilot. Phase 2A Phase 2B Phase 3A	will pairs commenced in the Phase 2 production to accel paired to begin first product in 2014. 3,000 22,000 35,000 50,000	third quarter MF locate the commission in the fourth of 2008 2009 2013 2016	sioning of Phase 28 o
Christina Lake AFG raps; that steam injection into Phase 28; the diventage of previous integration work to use readment facilities. Phase 28 is currently antic expected for amp up to initial design capacity in Phase I Pilot. Phase 2A Phase 2B Phase 3A Phase 3B Phase 3C Surmont	well pairs commenced in the Phase 2 production to accel pated to begin first product in 2014. 3,000 22,000 35,000 50,000 50,000	ethief quarter MF crafts the commission in the fourth of 2008 2009 2013 2016 2018 2020	sioning of Phase 2B o pairter of 2013 and is
Christina Loke AFG says that steam injection into Phase 2R v downtage of previous integration work to use reatment facilities. Phase 2B is currently antic expected to ramp up to initial design capacity i Phase I Pilot Phase 2A Phase 2B Phase 3B Phase 3C Surmont AFG says that so far in 2013 a total of 24 strat	well pairs commenced in the Phase 2 production to accel pated to begin first product in 2014. 3,000 22,000 35,000 50,000 50,000	ethief quarter MF crafts the commission in the fourth of 2008 2009 2013 2016 2018 2020	sioning of Phase 2B o pairter of 2013 and is
Christina Loke AFG says that steam injection into Phase 2R v downtage of previous integration work to use reatment facilities. Phase 2B is currently antic expected to ramp up to initial design capacity i Phase I Pilot Phase 2A Phase 2B Phase 3B Phase 3C Surmont AFG says that so far in 2013 a total of 24 strat	well pairs commenced in the Phase 2 production to accel pated to begin first product in 2014. 3,000 22,000 35,000 50,000 50,000	ethief quarter MF crafts the commission in the fourth of 2008 2009 2013 2016 2018 2020	sioning of Phase 2B o pairter of 2013 and is
Christina Loke AFG says that steam injection into Phase 2R v doantage of previous integration work to use reastment facilities. Phase 2B is currently antic expected to ramp up to initial design capacity i Phase 1Plot Phase 2A Phase 2B Phase 3B Phase 3C Surmont AFG says that so far in 2013 a total of 24 strateen completed at Surmont.	well pairs commenced in the Phase 2 production to accel pated to begin first product in 2014. 3,000 22,000 35,000 50,000 50,000 50,000 50,000	third quarter MF coate the commission in the fourth of 2008 2009 2013 2016 2018 2020 ource well and the	sioning of Phase 2B o pairter of 2013 and is
Christina Loke AFG says that steam injection into Phase 2R vidualitage of previous integration work to use reasoned tacilities. Phase 2B is currently anticepted to ramp up to initial design capacity in Phase 1 Pilot Phase 2A Phase 2B Phase 3A Phase 3B Phase 3C Surmont AFG says that so far in 2013 a total of 24 stratient completed at Surmont. Phase I	will pairs commenced in the Phase 2 production to accelerate pated to begin first product in 2014. 3,000 22,000 35,000 50,000 50,000 50,000 sigraphic wells, one water sc	third quarter MF coate the commission in the fourth of 2008 2009 2013 2016 2018 2020 ource well and the	sioning of Phase 2B o pairter of 2013 and is
Christina Lake AFG case that stream injection into Phase 28 which are to use the attention of the content of t	well pairs commenced in the Phase 2 production to accel pated to begin first product in 2014. 3,000 22,000 35,000 50,000 50,000 50,000 41,000 41,000	e third quarter MF breate the commission in the fourth of 2008 2009 2013 2016 2018 2020 surce well and the	sioning of Phase 2B o pairter of 2013 and is
Christina Lake AFG raps; that steam injection into Phase 78 when the diventage of previous integration work to use readment facilities. Phase 28 is currently antic expected for amp up to initial design capacity in Phase 1 Pilot. Phase 2A Phase 3A Phase 3B Phase 3C Surmont AFG says that so far in 2013 a total of 24 strategens can published at Surmont. Phase 2 Phase 3	well pairs commenced in the Phase 2 production to accel pated to begin first product in 2014. 3,000 22,000 35,000 50,000 50,000 50,000 41,000 41,000	e third quarter MF breate the commission in the fourth of 2008 2009 2013 2016 2018 2020 surce well and the	sioning of Phase 2B o pairter of 2013 and is
Christina Lake AFG raps; that steam injection into Phase 78 when the diventage of previous integration work to use reatment facilities. Phase 28 is currently antic expected for amp up to initial design capacity in Phase 1 Pilot. Phase 2A Phase 3A Phase 3B Phase 3C Surmont AFG raps; that so far in 2013 a total of 24 strateen completed at Surmont. Phase 2 Phase 3	well pairs commenced in the Phase 2 production to accel pated to begin first product in 2014. 3,000 22,000 35,000 50,000 50,000 50,000 41,000 41,000	e third quarter MF breate the commission in the fourth of 2008 2009 2013 2016 2018 2020 surce well and the	sioning of Phase 2B o pairter of 2013 and is
Christina Lake AFG raps; that steam injection into Phase 78 when the diventage of previous integration work to use reatment facilities. Phase 28 is currently antic expected for amp up to initial design capacity in Phase 1 Pilot. Phase 2A Phase 2A Phase 3A Phase 3B Phase 3C Surmont AFG says that so far in 2013 a total of 24 strategen completed at Surmont. Phase 2 Phase 3 Phase 3 Phase 3 Surmont AFG says that so far in 2013 a total of 24 strategen completed at Surmont. Phase 2 Phase 3 Surmont Says that so far in 2013 a total of 24 strategen completed at Surmont.	well pairs commenced in the Phase 2 production to accel pated to begin first product in 2014. 3,000 22,000 35,000 50,000 50,000 50,000 41,000 41,000	e third quarter MF breate the commission in the fourth of 2008 2009 2013 2016 2018 2020 surce well and the	sioning of Phase 2B o pairter of 2013 and is
Christina Lake AFG raps; that steam injection into Phase 78 AFG raps; that one integration work to use read the phase 19 AFG raps; that so far in 2013 a total of 24 strateges on the phase 3C. Summont AFG raps; that so far in 2013 a total of 24 strateges completed at Surmont. Phase 1 Phase 2 Phase 3 DSUM OIL SANDS CORP. Sepiko Resik Sum cays 8 anticipates regulatory approval to	well pairs commenced in the Phase 2 production to accel pated to begin first product in 2014. 3,000 22,000 35,000 50,000 50,000 50,000 18graphic wells, one water se 41,000 41,000 41,000 ar Sepillo Kesik in 2014, require	third quarter MF craft the commission in the fourth of 2008 2009 2013 2016 2018 2020 curce well and the TBD TBD TBD	sioning of Phase 2B o pairter of 2013 and is
Christina Loke AFG case that steam injection into Phase 2R vidualitage of previous integration work to use reastment facilities. Phase 2B is currently anticepected for amp up to initial design capacity in Phase 1 Pilot. Phase 2A Phase 2B Phase 3B Phase 3C Surmont AFG says that so far in 2013 a total of 24 strateges completed at Surmont. Phase 1 Phase 2 Phase 3 SSUM OIL SANOS CORP. Septio Kesik Pause 1	well pairs commenced in the Phase 2 production to accel paired to begin first product in 2014. 3,000 22,000 35,000 50,000 50,000 50,000 iligraphic wells, one water so 41,000 41,000 41,000 or Sepito Kesiki in 2014, req	third quarter MF coate the commission in the fourth of 2008 2009 2013 2016 2016 2020 surce well and the TBD TBD TBD TBD	sioning of Phase 2B o pairter of 2013 and is
Christina Loke AFG says that steam injection into Phase 2R v doantage of previous integration work to use reatment facilities. Phase 2B is currently antic expected to ramp up to initial design capacity i Phase I Pilot Phase 2A Phase 2B Phase 3A Phase 3B Phase 3C Surmont AFG says that so far in 2013 a total of 24 strat een completed at Surmont. Phase 1 Phase 2 Phase 3 Phase 3 Phase 5 Phase 5 Phase 5 Phase 6 Phase 6 Phase 6 Phase 6 Phase 7 Phase 1 Phase 1 Phase 1 Phase 1 Phase 2 Phase 1 Phase 2 Phase 3 Phase 1 Phase 2 Phase 1 Phase 2 Phase 3 Phase 2 Phase 1 Phase 2 Phase 1 Phase 2 Phase 3 Phase 3 Phase 3 Phase 3 Phase 2 Phase 1 Phase 2 Phase 3 Phase 3 Phase 3 Phase 3 Phase 3 Phase 1 Phase 2	well pairs commenced in the Phase 2 production to accel paired to begin first product in 2014. 3,000 22,000 35,000 50,000 50,000 50,000 iligraphic wells, one water so 41,000 41,000 41,000 or Sepito Kesiki in 2014, req	third quarter MF coate the commission in the fourth of 2008 2009 2013 2016 2016 2020 surce well and the TBD TBD TBD TBD	sioning of Phase 2B o pairter of 2013 and is
Christina Lake AFG rays that stream injection into Phone 28 with divantage of previous integration work to use realment lacitities. Phase 28 is currently antic spected for amp up to initial design capacity in Phase 1 Pilot. Phase 28 Phase 3A Phone 3B Phase 3A Phone 3B Phase 3C Surmont. AFG says that so far in 2013 a total of 24 strategy of the consumption of the	well pairs commenced in the Phase 2 production to accel paired to begin first product in 2014. 3,000 22,000 35,000 50,000 50,000 50,000 iligraphic wells, one water so 41,000 41,000 41,000 or Sepito Kesiki in 2014, req	third quarter MF coate the commission in the fourth of 2008 2009 2013 2016 2016 2020 surce well and the TBD TBD TBD TBD	sioning of Phase 2B o pairter of 2013 and is
Christina Lake AFG rays that steam injection into Phase 28 AFG rays that steam injection into Phase 28 AFG rays that steam injection into Phase 28 Phase 1 Pilot Phase 28 Phase 28 Phase 30 Phase 30 Surmont AFG says that so far in 2013 a total of 24 strategens completed at Surmont. Phase 2 Phase 3 Phase 3 Phase 30 Surmont AFG says that so far in 2013 a total of 24 strategens completed at Surmont. Phase 2 Phase 3 Phase 2 Phase 3 Phase 2 Phase 3 STATOR CANADALTO. Kai Kos Debseh	well pairs commenced in the Phase 2 production to accel pated to begin first product in 2014. 3,000 35,000 50,000 50,000 50,000 41,000 41,000 41,000 41,000 30,000 30,000	e third quarter MF brate the commis- ion in the fourth of 2008 2009 2018 2016 2018 2020 burce well and the 18D 18D 18D 18D 18D	sioning of Phase 2B o pairter of 2013 and is
Christina Lake AFG raps; that steam injection into Phase 28 AFG raps; that steam injection into Phase 28 AFG raps; that steam injection into Phase 28 Phase I Pilot Phase 28 Phase 28 Phase 30 Phase 30 Surmont AFG raps; that so far in 2013 a total of 24 strateen completed at Surmont. Phase 1 Phase 2 Phase 3 Phase 3 Summont AFG raps; that so far in 2013 a total of 24 strateen completed at Surmont. Phase 2 Phase 3 Summont Phase 2 Phase 3 SSUM OIL SANDS CORP. Seption 8 all strates 1 Phase 2 Phase 3 TATORI CANADA LTD. Kai Kos Debseh Leismer Demonstration	well pairs commenced in the Phase 2 production to accel pated to begin first product in 2014. 3,000 35,000 50,000 50,000 50,000 41,000 41,000 41,000 30,000 30,000	e third quarter MF brate the commis- ion in the fourth of 2008 2009 2018 2020 source well and the TBD TBD TBD TBD Uiring financing in 2018 2020	sioning of Phase 2B o pairter of 2013 and is
Christina Lake AFG-rays that steam injection into Phase 2R user the dearning of previous integration work to use reactment facilities. Phase 2B is currently anticepeted for amp up to initial design capacity in Phase 1 Pilot. Phase 2A Phase 2B Phase 3A Phase 3C Surmont AFG says that so far in 2013 a total of 24 strateen completed at Surmont. Phase 1 Phase 2 Phase 3 DSUM OIL SANDS CORP. Sepiko Resik Saum says it anticipates regulatory approval to Phase 1 Phase 2 Those 1 Phase 1 Phase 2 Those 1 Phase 2 Those 3 DSUM OIL SANDS CORP. Sepiko Resik Lecture Demonstration Corner	well pairs comment will in the Physica 2 production to accel physica 2 production to accel physica 2 production to accel physical production 2014. 3,000 35,000 50,000 50,000 50,000 41,000 41,000 41,000 30,000 30,000	third quarter MF craft the commission in the fourth of 2008 2009 2013 2016 2018 2020 course well and the TBD TBD TBD 18D 2018 2020 2017 2018 2020 2017	sioning of Phase 2B o pairter of 2013 and is
Christina Loke AFG case that steam injection into Phase 2R of death age of previous integration work to use rearment facilities. Phase 2B is currently anticepected for amp up to initial design capacity in Phase 1 Pilot. Phase 2A Phase 2B Phase 3A Phase 3B Phase 3C Surmont AFG case that so far in 2013 a total of 24 strategic completed at Surmont. Phase 1 Phase 2 Phase 3 DSUM OIL SANDS CORP. Septio Kesik Daum case it anticipates regulatory approval to Phase 1 Phase 2 Thase 1 Phase 2 Thase 1 Phase 2 Thase 1 Phase 3 DSUM OIL SANDS CORP. Septio Kesik Daum case it anticipates regulatory approval to Phase 1 Phase 2 Thase 2 Thase 1 Phase 2 Thase 1 Phase 2 Thase 1 Phase 2 Thase 2 Thase 1 Phase 2 Thase 1 Phase 2 Thase 3 Thase 4 Thase 4 Thase 4 Thase 4 Thase 5 Thase 6 Thase 7	well pairs commenced in the Phase 2 production to accel panel to begin list product on 2014. 3,000 35,000 50,000 50,000 50,000 10,000 10,000 20,000	third quarter MF craft the commission in the fourth of 2008 2009 2013 2016 2016 2020 cource well and then TBD TBD Ulring financing in 2018 2020	sioning of Phase 2B o pairter of 2013 and is
Christina Lake AFG caps that stream injection into Phase 2R AFG caps that stream injection into Phase 2R AFG caps that stream injection into Phase 2R AFG caps that so the injection work to use Phase 1 Pilot Phase 2R Phase 3R Phase 3R Phase 3B Phase 3C Surmont AFG caps that so far in 2013 a total of 24 strategen completed at Surmont. Phase 1 Phase 2 Phase 3 SSUM OIL SANDS CORP. Septio Resik Summ caps 4 anticipates regulatory approval to Phase 2 Phase 2 TATOIL CANADA LTO. Kai Kos Debseh Leomer Demonstration Corner Leismer Commercial Leismer Commercial	well pairs commenced in the Phase 2 production to accel pated to begin first product in 2014. 3,000 22,000 35,000 50,000 50,000 41,000 41,000 41,000 30,000 10,000 40,000 10,000 20,000	e third quarter MF breate the commission in the fourth of 2008 2009 2013 2016 2018 2020 surce well and the TBD TBD TBD 2018 2020 2017 TBD 2017 TBD TBD 2017 TBD TBD	sioning of Phase 2B o pairter of 2013 and is
Christina Lake AFG says that steam injection into Phase 28 wide diventage of previous integration work to use reatment lacitities. Phase 28 is currently anticepected for amp up to initial design capacity in Phase 1 Pilot. Phase 28 Phase 38 Phase 38 Phase 38 Phase 38 Phase 38 Phase 39 Phase 30 Phas	well pairs commenced in the Phano 2 production to accel pated to begin first product in 2014. 3,000 22,000 35,000 50,000 50,000 50,000 41,000 41,000 41,000 30,000 10,000 10,000 40,000 10,000 20,000 40,000 10,000 20,000 40,000	ethief quarter MF brate the commis- ton in the fourth of 2008 2009 2013 2016 2018 2020 2018 2020 2018 2020 2019 2010 2017 78D 18D 18D	sioning of Phase 2B o pairter of 2013 and is
Christina Lake AFG rays that steam injection into Phase 28 AFG rays that steam injection into Phase 28 AFG rays that steam injection into Phase 28 Phase 1 Pilot Phase 28 Phase 28 Phase 30 Phase 30 Surmont AFG says that so far in 2013 a total of 24 strategies consumpted at 5 umont. Phase 2 Phase 3 Phase 3 Phase 3 Surmont AFG says that so far in 2013 a total of 24 strategies completed at 5 umont. Phase 2 Phase 3 Phase 2 Phase 3 STATOIL CANADALTO. Kai Kos Debseh Leismer Demonstration Correct Expansion Leismer Synamion Correct Expansion Correct Expansion Correct Expansion Langingstone	well pairs commenced in the Phono 2 production to accel patent to begin first product in 2014. 3,000 22,000 35,000 50,000 50,000 50,000 41,000 41,000 41,000 41,000 10,000 10,000 20,000 40,000	ethief quarter MF brate the commission in the fourth of 2008 2009 2013 2016 2018 2020 burce well and the 18D 18D 18D 2020 2010 2017 18D 18D 18D 18D 18D	sioning of Phase 2B o pairter of 2013 and is
Christina Lake AFG raps; that steam injection into Phase 28 AFG raps; that steam injection into Phase 28 AFG raps; that steam injection into Phase 28 Phase I Pilot Phase 28 Phase 28 Phase 30 Phase 30 Surmont AFG raps; that so far in 2013 a total of 24 strateen completed at Surmont. Phase 1 Phase 2 Phase 3 Phase 3 Summont AFG raps; that so far in 2013 a total of 24 strateen completed at Surmont. Phase 2 Phase 3 STATORI CANADALTO. Kai Kos Dehseh Lesmer Demonstration Corner Expansion Hangingstone Leibmer Fyannion Corner Expansion Hangingstone Leibmer Fyannion Corner Expansion Hangingstone Leibmer Fyannion Corner Expansion Leibmer Fyannion Leibmer Fyannion Corner Expansion Leibmer Fyannion Leibmer Fyannion Leibmer Fyannion Leibmer Fyannion	well pairs commenced in the Phose 2 production to accel pated to begin first product in 2014. 3,000 2000 35,000 50,000 50,000 50,000 41,000 41,000 41,000 41,000 41,000 41,000 41,000 40,000 40,000 20,000	ethier quarter MF brate the commission in the fourth of 2008 2009 2013 2016 2018 2020 Durce well and the 18D 18D 2010 2017 18D	sioning of Phase 2B o pairter of 2013 and is

TRD

TBD

TED

40,000

40,000

40,000

Chard

Meadow Creek

Phase 1
Phase 2
SURMONT ENERGY LTO.

			BECCHI ATTOCK
CURRENT PROJECT	CAPACITY	START-UP	REGULATORY STATUS
Phase 1	12,000	2015	Assettion
VALUE CREATION INC. Advanced TriStar		Nach and a second	The state of the s
		A A IT (0	and the season of
Review of the environmental impact as			roject is underway.
AIS-I	15,000	2016	
ATS-2 ATS-3	30,000	2018	1 de la composición dela composición de la composición de la composición de la composición dela composición de la composición dela composición dela composición de la composición dela composición de la composición dela c
TriStar	30,000	2020	
Value Creation is one of several compa	nies to be impacted by the Albert	a government's per	nding cancellation of
oilsands leases around Fort McMurray			
Pilot	1,000	2014	4,000004
OTD TWEE SECTION -	IN SITU		
BAYTEX ENERGY CORP Gemini			
Baytex says the SAGD well pair for its (ormains on track for steaming by early		he third quarter of	2013, and the company
Pilot	1,200	2014	- Englisher
Commercial	5,000	2016	
BIRCHWOOD RESOURCES INC.			A SECOND
Sage			
Birchwood has filed its regulatory appli		project. Propak Syst	tems of Airdrie, Alta., v
execute modular surface facility constru			
Pilot	5,000	2015	
CANADIAN NATURAL RESOURCES L	MITED		
Primrose & Wolf Lake			
eccess. The steaming plan has been mo Primrose East	ordified, with steaming reduced in:	some areas 2008	
Primrose t ast			
Primrose North		2006	
Primrose North Primrose South	30,000 45,000		2001
	30,000	2006	Orders Orders
Primrose South	30,000 45,000	2006 1985	Constra Constra Constra
Primrose South Wolf Lake	30,000 45,000	2006 1985	Constraint Constraint
Primrose South Wolf Lake DEVON CANADA CORPORATION Walleye	30,000 45,000 13,000	2006 1985 1985	on in its 2014 budget
Primrose South Wolf Lake DEVON CANADA CORPORATION Walleye	30,000 45,000 13,000	2006 1985 1985	an in its 2014 budget.
Primrose South Wolf Lake DEVON CANADA CORPORATION Walleys Devon says the Walleys project has be Phase 1 HUSKY ENERGY INC.	30,000 45,000 13,000 on deferred by a year and will be	2006 1985 1985 1985	on in its 2014 budget.
Primrose South Wolf Lake DEVON CANADA CORPORATION Walleys Devon says the Walleys project has bee Phase 1 HUSKY ENERGY ING. Caribou	30,000 45,000 13,000 on deferred by a year and will be : 9,000	2006 1985 1985 1985 essenced for including	on in its 2014 budget.
Primrose South Wolf Lake DEVON CANADA CORPORATION Walkeye Devon says the Walkeye project has bee Phase 1 HUSKY ENERGY INC. Caribou Demonstration	30,000 45,000 13,000 on deferred by a year and will be	2006 1985 1985 1985	on in its 2014 budget.
Primroze South Wolf Lake DEVON CANADA CORPORATION Walleye Devon says the Walleye project has bee Phase 1 HUSKY ENERGY INC. Caribou Demonstration Tucker	30,000 45,000 13,000 an deferred by a year and will be - 9,000	2006 1985 1985 1985 essenced for including	on in its 2014 budget.
Primrose South Wolf Lake DEVON CANADA CORPORATION Walkeye Devon says the Walkeye project has bee Phase 1 HUSKY ENERGY INC. Caribou Demonstration	30,000 45,000 13,000 on deferred by a year and will be : 9,000	2006 1985 1985 1985 2017	on in its 2014 budget.
Primrose South Wolf Lake DEVON CANADA CORPORATION Walleye Deven says the Walleye project has bee Phase 1 HUSKY ENERGY INC. Caribou Demonstration Tucker Phase 1	30,000 45,000 13,000 an deferred by a year and will be - 9,000	2006 1985 1985 1985 2017	on in its 2014 budget.
Primrose South Wolf Lake DEVON CANADA CORPORATION Walleye Devon says the Walleye project has bee Phase 1 HUSKY ENERGY INC. Caribou Demonstration Tucker Phase 1 MERRIAL OIL LIMITED Cold Lake	30,000 45,000 13,000 an deferred by a year and will be a 9,000 10,000	2006 1985 1985 1985 2017 TBD 2006	Tanaca James
Primrose South Wolf Lake DEVON CANADA CORPORATION Walkeye Devon says the Walkeye project has bee Phase 1 HUSKY ENERGY INC. Caribou Demonstration Tucker Phase 1 MPERIAL OILLIMITED Cold Lake Imperial says that the Nabye expansion	30,000 45,000 13,000 an deferred by a year and will be a 9,000 10,000	2006 1985 1985 1985 2017 TBD 2006	Tanaca James
Primrose South Wolf Lake DEVON CANADA CORPORATION Walkeye Devon says the Walkeye project has bee Phase 1 HUSKY ENERGY INC. Caribou Demonstration Tucker Phase 1 MPERIAL OILLIMITED Cold Lake Imperial says that the Nabye expansion	30,000 45,000 13,000 an deferred by a year and will be a 9,000 10,000	2006 1985 1985 1985 2017 TBD 2006	Tanaca James
Primrose South Wolf Lake DEVON CANADA CORPORATION Walleye Devon says the Walleye project has bee Phase I HUSSEY ENERGY INC. Caribou Demonstration Tucker Phase I MESGIAL OIL LIMITED Cold Lake Imperial says that the Nabiye expansion aget for a late 2014 start-up.	30,000 45,000 13,000 an deferred by a year and will be 3 9,000 10,000 30,000	2006 1985 1985 2017 TBD 2006	Tanaca James
Primrose South Wolf Lake DEVON CANADA CORPORATION Walleye Deven says the Walleye project has bee Phase 1 HLSKY ENERGY INC. Caribou Demonstration Tucker Phase 1 MPERIAL OIL LIMITED Cold Lake Imperial says that the Nabiye expansionanget for a late 2014 start-up. Phases 1-10 Phases 1-10 Phases 11-13	30,000 45,000 13,000 an deferred by a year and will be 3 9,000 10,000 30,000 a was 59 per cent complete at the	2006 1985 1985 2017 TBD 2006	Tanaca James
Primrose South Wolf Lake DEVON CANADA CORPORATION Walleye Deven says the Walleye project has bee Phase 1 HUSKY ENERGY INC. Caribou Demonstration Tucker Phase 1 MPERIAL OIL LIMITED Cold Lake Imperial says that the Native expansionanget for a late 2014 start-up. Phase 1-10	30,000 45,000 13,000 an deferred by a year and will be 3 9,000 10,000 30,000 a was 59 per cent complete at the	2006 1985 1985 2017 TBD 2006	Tanaca James
Primrose South Wolf Lake DEVON CANADA CORPORATION Walleys Devon says the Walleys project has bee Phase 1 HUSKY ENERGY INC. Caribou Demonstration Tucker Phase 1 MPERIAL OIL LIMITED Cold Lake Imperial says that the Native expansion larget for a late 2014 start-up. Phases 1-10 Phases 1-13 Phases 1-14.	30,000 45,000 13,000 an deferred by a year and will be 3 9,000 10,000 30,000 a was 59 per cent complete at the	2006 1985 1985 2017 TBD 2006	July 11
Primrose South Wolf Late DEVON CANADA CORPORATION Walleys Devon says the Walleys project has bee Phase 1 HUSKY ENERGY INC. Caribou Demonstration Tucker Phase 1 MPERIAL OIL LIMITED Cold Late Imperial says that the Native expansion larget for a late 2014 start-up. Phases 1-10 Phases 1-15 Phases 1-1-15 Phases 1-1-15 OSUM GIL SANDS CORP. Talga	30,000 45,000 13,000 on deferred by a year and will be a 9,000 10,000 30,000 was 59 per cent complete at the 10,000 30,000 40,000	2006 1985 1985 2017 TBD 2006 beend of the third gr	carter and remains on
Primrose South Wolf Lake DEVON CANADA CORPORATION Walleye Deven says the Walleye project has bee Phase 1 HUSKY ENERGY INC. Caribou Demonstration Tucker Phase 1 MPERIAL OIL LIMITED Cold Lake Imperial says that the Pabiye expansion Larget for a late 2014 start-up. Phase 1-10 Phase 1-13 Phases 1-145 OSSUM OIL SANDS CORP. Talga Dourn says engineering work is undered	30,000 45,000 13,000 on deferred by a year and will be a 9,000 10,000 30,000 was 59 per cent complete at the 10,000 30,000 40,000	2006 1985 1985 2017 TBD 2006 beend of the third gr	surfer and remains on
Primrose South Wolf Lake DEVON CANADA CORPORATION Walleye Deven says the Walleye project has bee Phase 1 HUSKY ENERGY INC. Caribou Demonstration Tucker Phase 1 MPERIAL OIL LIMITED Cold Lake Imperial says that the Pabiye expansion Larget for a late 2014 start-up. Phase 1-10 Phase 1-13 Phases 1-145 OSSUM OIL SANDS CORP. Talga Dourn says engineering work is undered	30,000 45,000 13,000 on deferred by a year and will be a 9,000 10,000 30,000 was 59 per cent complete at the 10,000 30,000 40,000	2006 1985 1985 2017 TBD 2006 beend of the third gr	carter and remains on
Primrose South Wolf Lake DEVON CANADA CORPORATION Walleye Devon says the Walleye project has bee Plaste 1 HUSKY ENERGY INC. Caribou Demonstration Tucker Plaste 1 HPERIAL OIL LIMITED Cold Lake Imperial says that the Native expansion Larget for a late 2014 start-up. Phases 1-10 Phases 1-10 Phases 1-10 Council Limited C	30,000 45,000 13,000 an deferred by a year and will be a 9,000 10,000 30,000 was 59 per cent complete at the 110,000 30,000 40,000	2006 1985 1985 2017 TBD 2006 e end of the third qui 1985 2002 2014	carter and remains on
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Primrose South Wolf Lake DEVON CANADA CORPORATION Walleye Deven says the Walleye project has bee Phase I HUSRY ENERGY INC. Caribou Demonstration Tucker Phase 1 IMPERIA OIL LIMITED Cold Lake Imperial says that the Nabiye expansion target for a late 2014 start-up. Phuses 1-10 Phuses 1-13 Phuses 1-15 OSUM OIL SANDS CORP. Talga Osums says engineering work to underwing 2013 Financing is required. Phase I Phuse 2 PENGROWTH ENERGY CORPORATIO	30,000 45,000 13,000 20,000 30,000 30,000 30,000 40,000 any and some long-lead items have 23,000 22,000	2006 1985 1985 1985 2017 TBD 2006 e end of the third gi	arter and remains on
Primmore South Wolf Lake DEVON CANADA CORPORATION Walleye Devon says the Walleye project has bee Phose I HUSRY ENERGY INC. Caribou Demonstration Tuckar Phase I HMPERIAL OIL LIMITED Cold Lake Imperial says that the Nabiye expansion target for a late 2014 start-up. Phuses I-10 Phuses I-10 Phuses II-13 Phuses II-13 OSUM OIL SANDS CORP. Talga Osum says engineering work is undered in 2013 Financing is required Phase I Phuse 2 PENGROWTH ENERGY CORPORATIC Lindherge	30,000 45,000 13,000 13,000 an deferred by a year and will be a 9,000 10,000 30,000 30,000 40,000 any and some long-lead items have a 23,000 22,000 XX	2006 1985 1985 1985 2017 TBD 2006 2006 2014 2016 2016 2018 2014 2016 2018	get sanction is expect
Primmore South Wolf Lake DEVON CANADA CORPORATION Walleye Devon says the Walleye project has bee Phase 1 HUSKY ENERGY INC. Caribou Demonstration Tucker Phase 1 IMPERIAL OIL LIMITED Cold Lake Imperial says that the Nabiye expansio target for a late 2014 start-up. Phases 1-10 Phases 11-13 Phases 11-15 Phase 11-15 Phases 11-15 Phases 11-15 Phases 11-15 Phases 11-15 Phase 11-15 Phases 11-15 Phases 11-15 Phase 11 Phase 2 PENGROWTH ENERGY CORPORATIO Lindbergh Pengrowth says that civil construction engineering is 0 90 per and complete, and kechanical construction of the cental	30,000 45,000 13,000 13,000 on deferred by a year and will be a 9,000 10,000 30,000 10,000 30,000 40,000 any and some long-lead items have 23,000 22,000 Ith first 12,500-barrel-per day major equipment has been order processing facility and drilling of 12,500 barrel-per day major equipment has been order processing facility and drilling of 12,500 barrel-per day major equipment has been order processing facility and drilling of 15,500 barrel-per day major equipment has been order processing facility and drilling of 15,500 barrel-per day major equipment has been order processing facility and drilling of 15,500 barrel-per day major equipment has been order processing facility and drilling of 15,500 barrel-per day major equipment has been order processing facility and drilling of 15,500 barrel-per day major equipment has been order processing facility and drilling of 15,500 barrel-per day major equipment has been order processing facility and drilling of 15,500 barrel-per day major equipment has been order processing facility and drilling of 15,500 barrel-per day major equipment has been order processing facility and drilling of 15,500 barrel-per day major equipment has been order processing facility and drilling of 15,500 barrel-per day major equipment has been order processing facility and drilling of 15,500 barrel-per day major equipment has been order processing facility and drilling of 15,500 barrel-per day major equipment has been order processing facility and drilling of 15,500 barrel-per day major equipment has been order processing facility and drilling of 15,500 barrel-per day major equipment has been order processing facility and drilling of 15,500 barrel-per day major equipment has been order processing facility and drilling of 15,500 barrel-per day major equipment has been order processing facility and drilling of 15,500 barrel-per day major equipment has been order processing facility and drilling of 15,500 barrel-per day major equipment has been decolor processing facility and drilling of 15,500 barre	2006 1985 1985 1985 2017 TBD 2006 2006 2014 2016 2018 commercial phase ed and skid fabrica 3 additional well p	commenced in August
Primrose South Wolf Lake DEVON CANADA CORPORATION Walleye Devon says the Walleye project has bee Phase 1 HUSRY ENERGY INC. Caribou Demonstration Tucker Phase 1 IMPERIAL OIL LIMITED Cold Lake Imperial says that the Nabiye expansio larget for a late 2014 start-up. Phases 1-10 Phases 1-13 Phases 1-14-16 OSUM OIL SANDS CORP. Talgae Cours says engineering work is underwing 2013 Financing is required Phase 1 Phase 2 PENISROWTH ENERGY CORPORATIO Lindbergh Pengrowth says that civil construction impering is 90 per cent complete, at Mechanical construction of the central two well pairs currently producing at the meanism on budget and on schedule with	30,000 45,000 13,000 13,000 13,000 an deferred by a year and will be a 9,000 10,000 30,000 30,000 40,000 40,000 any and some long-lead items have a some long-lead items have lead to some long-lead to some long-lead to some long-lead to some long-lead to some l	2006 1985 1985 1985 2017 TBD 2006 2006 2016 2016 2016 2018 commercial phase and skid fabrica 23 additional well pschedule in Septement of project expected in project expected	commenced in August tion is underway. airs to supplement the noter 2013. The project
Primrose South Wolf Lake DEVON CANADA CORPORATION Walleye Devon says the Walleye project has be Phase 1 HUSKY ENERGY INC. Caribou Demonstration Tucker Phase 1 HUSKY ENERGY INC. Caribou Demonstration Tucker Phase 1 HMPSRIAL OIL LIMITED Cold Lake Imperial says that the fabrye expansion target for a late 2014 start-up. Phases 1-10 Phases 1-13 Phases 1-14-15 OSUM OIL SANDS CORP. Taiga Osum says engineering work is underwing 2013 financing is required Phase 1 Phase 2 Phase 2 PENGROWTH ENERGY CORPORATION Lindbergh Pengrowth says that civil construction- megineering is 90 per cent complete, all Mechanical construction of the central two well pairs currently producing at the mains on budget and on schedule will be well pairs currently producing at the memains on budget and on schedule will be well pairs currently producing at the memains on budget and on schedule will	30,000 45,000 13,000 13,000 on deferred by a year and will be a 9,000 10,000 30,000 30,000 40,000 40,000 40,000 10 and some long-lead items have 23,000 22,000 10 and some long-lead items have 24,000 10 and some long-lead items have 24,000 10 and some long-lead items have 25,000 11 and some long-lead items have 25,000 12 and some long-lead items have 25,000 13 and some long-lead items have 25,000 14 and some long-lead items have 25,000 15 and some long-lead items have 25,000 16 and some long-lead items have 25,000 17 and some long-lead items have 25,000 18 and some long-lead items have 25,000 19 and some long-lead items have 25,000 10 and	2006 1985 1985 1985 2017 TBD 2006 2006 2016 2016 2016 2018 commercial phase and skid fabrica 23 additional well pschedule in Septement of project expected in project expected	commenced in August tion is underway. airs to supplement the noter 2013. The project
Primrose South Wolf Lake DEVON CANADA CORPORATION Walleye Deven says the Walleye project has bee Phase 1 HUSKY ENERGY INC. Caribou Demonstration Tucker Phase 1 MPERIAL CILLIMITED Cold Lake Imperial says that the Native expansionance for a late 2014 start-up. Phases 1-10 Phases 1-13 Phases 1-14-16 DOSUM GIL SANDS CORP. Talea Dosum says engineering work is underwing a 2013. Financing is required Phase 1 Phase 2 PENDROWTH ENERGY CORPORATIO Lindbergh Mechanical construction of the central two well pairs currently producing at the remains on budget and on schedule will 2014. Plet performance construction of the central two well pairs currently producing at the remains on budget and on schedule will 2014. Plet performance construction of the central two well pairs currently producing at the remains on budget and on schedule will 2014. Plet performance construction of the central two well pairs currently producing at the remains on budget and on schedule will 2014. Plet performance construction of the central two well pairs currently producing at the remains on budget and on schedule will 2014. Plet performance constructs to sither phased 30,000-barrel-per-day exp	30,000 45,000 13,000 13,000 13,000 10,000 10,000 30,000 10,000 30,000 40,000 40,000 22,000 In was 59 per cent complete at the	2006 1985 1985 1985 1985 2017 TBD 2006 2016 2014 2016 2018 commercial phase ed and skid fabrica 23 additional well p schedule in Septem is project exposed in project exposed in project exposed is issued the propos	commenced in August tion is underway. airs to supplement the noter 2013. The project
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Primrose South Wolf Lake DEVON CANADA CORPORATION Walleye Devon says the Walleye project has be Phase 1 HUSKY ENERGY INC. Caribou Demonstration Tucker Phase 1 HUSKY ENERGY INC. Caribou Demonstration Tucker Phase 1 HMPSRIAL OIL LIMITED Cold Lake Imperial says that the fabrye expansion target for a late 2014 start-up. Phases 1-10 Phases 1-13 Phases 1-15 Phases 1-15 Phases 1-15 Phases 1-15 Phases 1-15 Phase 2 ENGROWTH ENERGY CORPORATION Lindbergh Pengrowth says that civil construction engineering is 90 per cent complete, all Mechanical construction of the central two well pairs currently producing at the emains on budget and on schedule will Vald Pilot performance continues to si the phased 30,000-barrel-per-day exp Pilot Phase 1	30,000 45,000 13,000 13,000 an deferred by a year and will be a 9,000 10,000 30,000 30,000 40,000 40,000 any and some long-lead items have 23,000 22,000 Any and some long-lead items have 23,000 any and some long-lead items have 23,000 any and some long-lead items have 24,000 in the first 12,500-barrel-per-day imagine optionent has been order processing facility and drilling of a lindbergh pilot commercial on his steam from the commercial one strong results. Pengrowth has ansion.	2006 1985 1985 1985 1985 2017 TBD 2006 2006 2016 2016 2018 commercial phase and additional phase and phase and project expected is issued the propose 2012 2015	commenced in August tion is underway. airs to supplement the other 2013. The project
Primrose South Wolf Lake DEVON CANADA CORPORATION Walleye Devon says the Walleye project has be Phase 1 HUSKY ENERGY INC. Caribou Demonstration Tucker Phase 1 HUSKY ENERGY INC. Caribou Demonstration Tucker Phase 1 HMPERIAL OIL LIMITED Cold Lake Imperial says that the Rabiye expansio larget for a late 2014 start-up. Phases 1-10 Phases 1-15 Phases 1-15 Phases 1-15 Phases 1-16 SOUM GIL SANDS CORP. Taiga Cours says engineering work is underw in 2013. Financing is required Phase 1 Phase 2 PENGROWTH ENERGY CORPORATIO Lindbergh Pengrowth says that civil construction engineering is 90 per cent complete, all Mechanicals construction of the continue to sit 1014 Pilot performance continues to sit the phased 30,000-barret-per-day exp Pilot	30,000 45,000 13,000 13,000 13,000 10,000 10,000 30,000 10,000 30,000 40,000 any and some long-lead items have 23,000 22,000 In was 59 per cent complete at the 10,000 30,000 40,000 All major equipment has been odde processing facility and didling of the linest 12,500-barrel-per day in major equipment has been odde processing facility and didling of the linest seam from the commercial on the first seam from the commercial own strong results. Pengrowth has ansion.	2006 1985 1985 1985 1985 2017 TBD 2006 2006 2014 2016 2018 commercial phase ed and skid fabrica additional well pschedule in Septen il project expected i project expected is issued the propes	commenced in August tion is underway. airs to supplement the other 2013. The project

CURRENT PROJECT	CAPACITY	START-UP	REGULATORY
ROYAL DUTCH SHELL PLC			
Orion			
Shell had previously put up for sale its O has ended sale activities.	nion asset, but says it has not re	ceived any offers to	hat reflect its value and
Phase 1.	10.000	2007	
Phase 2	10,000	180	
MACE RIVER REGION — ANDORA ENERGY CORPORATION	IN SITU		
Sawn Lake			
Andora majority owner Pan Orient Energ	y says that final construction a	of propagation is up	otenway the first SACD
well pair has been drilled and equipment			
Demonstration	1,400	2014	Completion
BAYTEX ENERGY CORP.			
Cliffdale			
Commissioning has commenced on Bayte missioning is expected in the fourth quarte	 s's second cyclic steam stimulation and cold production is expected 	on module at Peace I to commence imm	River: Steam facility com- inently.
Pilot	2,000	2011	The Observation
Harmon Valley			
Pilot	TBD	2011	00000
MURPHY OIL COMPANY LTD.	Character traditional and the second		
Cadotte	tun	700	
Seal/Cadotte	TBD	TBD	
Pilot	TBD	TBD	
ORTHERN ALBERTA OIL LTD.	The state of the s		
Sawn Lake			
ompany owner Deep Well Oil & Gas sa	ys drilling has commenced on ti	e first of two horiz	ontal SAGD wells (one
well pair). Remaining 2013 work consists il treating, along with water source and	disposal well facilities. It is antic	ipated steam opera	ity, water handling and tions will commence in
recember 2013 with first oil production a		2014.	
Pilot	700	TBD	The Victoria
ENN WEST PETROLEUM LTD. Harmon Valley South	State of the state of		
erm West has announced that in 2014 it	will divest its oilsands assets in	the Peace River re-	gion of Alberta as part
t a strategy to prioritize light oil develop	ment. These assets comprise th	e Peace River Oit Pa	artnership, which was
stablished in 2010 with an affiliate of Ch Pilot	TBD	TBD	
Seal Main		700	
Pilot	75	-	
THE		2011	
Commercial	10,000	2015	
Commercial ETROBANK ENERGY AND RESOURCE	10,000		And a second
Commercial ETROBANK ENERGY AND RESOURCE Dawson	10,000 S LT O.	2015	10 - 10 TIM
Commercial ETROBANK ENERGY AND RESOURCE Demson strobank has received regulatory approviduation wells. The company is prepare	10,000 SLTD: val to initiate two cyclic steam- ing surface facilities for CSS up	2015 dimulation cycles	with each of its THAI
Commercial ETROBANK ENERGY AND RESOURCE Demoon strobank has received regulatory approve odus, tion wells. The company is prepara use month steam cycle in late Novemb	10,000 STD: val to initiate two cyclic steam- ing ourlace facilities for CSS up for 2013.	2015 stimulation cycles erations and expes	with each of its THAI ts to initiate the first
Commercial ETROBANK ENERGY AND RESOURCE Demson strobank has received regulatory approviduation wells. The company is prepare	10,000 SLTD: val to initiate two cyclic steam- ing surface facilities for CSS up	2015 climulation cycles erations and expenses 2014	with each of its THAI Its to initially the first
Commercial ETROBANK ENERGY AND RESOURCE Dawson Introbank has received regulatory appro- duction wells. The company is prevent to the company of the company is prevent Lisperimental THAL Demonstration.	10,000 STD. val to initiate two cyclic steam- ing surface facilities for CSS up or ADIS	2015 stimulation cycles erations and expes	with each of its THAI Is to initiate the liest
Commercial ETROBANK ENERGY AND RESOURCES Dawson trobani: has received regulatory approuduction wells. The company is prepar we-month stem cycle in late Novemt. Csperimental TI (All Demonstration Phase 2	10,000 STD. val to initiate two cyclic steam- ing surface facilities for CSS up or ADIS	2015 climulation cycles erations and expenses 2014	with each of its THAI ts to initiate the first
Commercial ETROBANK ENERGY AND RESOURCE Dawson Trobank has received regulatory appre- dout tion well. The company is preparate month steam cycle in late Royemic Experimental THAI Demonstration Phase 2 Phase River ell has cantioned the Carmon Creek pe	10,000 S LTO. val to initiate two cyclic steam- ing surface lacilities for CSS up er 2013 10,000 10,000	2015 dimulation cycles erations and expas 2014 TBD	As to initiate the first
Commercial ETROBANK ENERGY AND RESOURCE Demon Trobank has received regulatory appre- dout tion well. The company is preparate month steam cycle in late Royemb Caperimental THAI Demonstration Phase 2 Phase River region.	10,000 SLTD. val to initiate two cyclic steam: ing surface lacilities for CSS up er 2018 10,000 10,000	2015 dimulation cycles erations and expas 2014 TBD	As to initiate the first
Commercial ETROBANK ENERGY AND RESOURCE Demon Introbank has received regulatory appreciation with the company is preparate month starm cycle in late Royemic Experimental II HAI Demonstration Phase 2 PALA DUTCH SHELL PLC Pauca River ell has canctioned the Carmon Creek prace River region. Cadotte Lake	10,000 SLTD. val to initiate two cyclic steam ing surface lacilities for CSS uper 2018 10,000 10,000 roject, which will be the most signal.	2015 dimulation cycles erations and expes 2014 TBD grificant project even 1986	As to initiate the first
Commercial ETROBANK ENERGY AND RESOURCE Demon Trobank has received regulatory appre- dout tion well. The company is preparate month steam cycle in late Royemb Caperimental THAI Demonstration Phase 2 Phase River region.	10,000 SLTD. val to initiate two cyclic steam: ing surface lacilities for CSS up er 2018 10,000 10,000	2015 climulation cycles crations and expens 2014 TBD policiant project eve 1986 2017	As to initiate the first
Commercial TROBANK ENERGY AND RESOURCE Demoin trobank has received regulatory appro- dus tion well. The company is prepar nee month steam cycle in late Novemb Experimental IT I/AT Demonstration Phase 2 PAL DUTCH SHELL PLC Phase River region. Caldotte Lake. Carmon Cinek- Phase 1	10,000 S LTO. val to initiate two cyclic sheam- ing surface lacilities for CSS up- er A013. 10,000 10,000 10,000 12,500 40,000	2015 dimulation cycles erations and expes 2014 TBD grificant project even 1986	As to initiate the first
Commercial TROBANK ENERGY AND RESOURCE Demoin Arrebank has received regulatory appro- duction well. The company is prepar nee month steam cycle in late Novemb Experimental IT I/AI Demonstration Phase 2 TAL DUTCH SHELL PLC Peace River eil has canctioned the Carmon Creek prace River region. Cadotte Lake Carmon Creek - Phase 1 Carmon Creek - Phase 1	10,000 S LTO. val to initiate two cyclic sheam- ing surface lacilities for CSS up- er A013. 10,000 10,000 10,000 12,500 40,000	2015 climulation cycles crations and expens 2014 TBD policiant project eve 1986 2017	As to initiate the first
Commercial TROBANK ENERGY AND RESOURCE Demoin Arrebank has received regulatory appro- duction wells. The company is prepar nee-month stram cycle in tale Novemb Experimental II (AII Demonstration Phase 2 PYAL DUTCH SHELL PLC Peace River ell has cannitioned the Carmon Crock prace River region. Cardiotte Lijke Carmon Crock - Phase 1 Carmon Crock - Phase 2 UTHERN PACIFIC RESOURCE CORP. Red Carts	10,000 S LTO. val to initiate two cyclic steam ing surface lacilities for CSS upper 2013 10,000 10,000 10,000 12,300 40,000 40,000	2015 dimutation cycles erations and expes 2014 TBD milicant project ew 1986 2017 TBD	As to initiate the first
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CU	RRENT PROJECT	CAPACITY	START-UP	REGULATORY STATUS
	Horizon			
ma day	nadian Natural says that operating per for turnaround in May 2013. Horizon / The overall phased expansion to 25 hat expansion, Reliability, 91 per cent	SCO production in the third qua 0,000 barrels per day is 30 per	rter was approxim- cent physically con	itely 112,000 barrels papers, with the first p
	Phase 1	110,000	2009	
	Reliability - Tranche 2	5,000	2014	
	Phase 2A	10,000	2015	
	Phase 28	45,000	2016	
	Phase 3	80,000	2017	
IVA	NHOE ENERGY INC.			
proj ers	Tamarack thoe Enorgy has received a letter of n ject. The company says it has now so that filed statements of concern and is it anticipates "regulatory clarity" by Phase 1	ccessfully secured letters of non continues efforts to resolve the t	-objection from fiv	e of the seven stakeh
Sidi	NCOR ENERGY INC.	34,704	7017	STATE OF THE PARTY
-	Base Operations			
tion	cor says that production was reduced uum tower and related units, which wide rid major planned maintenance activ Ut and U2 Millennium Vacuum Unit Millennium Coker Unit	ras successfully completed in Oc	tober. Suncor says	this marks the comp
	Voyageur Upgrader 3			
Sun	cor has announced if will not proceed	I with the Voyageur Upgrader. To	tal is no longer a p	artner on the project.
	Phase 1	127,000	2016	The same
	Phase 2	63,000	TBD	
SYN	CRUDE CANADA LTD.			
- !	Mildred Lake/Aurora			
The	proposed terms of reference for Sync	rude's Mildred Lake Extension (MLX) project are n	nw available for publ
	ment until November 1 here http://e			-
	Base Plant Stage 1 & 2 Debottleneck	250,000	1978	
	Stage 3 Expansion (UE-1) Stage 3 Debottleneck	100,000	2006	
		75,000	TBD	Almount
	UTH ATHABASCA REG	IDH - OFGRADER	The state of the s	A CONTRACTOR OF THE PARTY OF
-	Long Ealm		New York Control of the Control of t	A PERSONAL PROPERTY.
	Phase 1	58,500	2009	
VAL	UE CREATION INC.		A SECTION OF	The state of the s
-	Advanced TriStar			
Revie	ew of the environmental impact asses	ssment and application for the A	dvanced TriStar pro	oject is underway.
1	ATS-)	12,750	2016	The section of
1	ATS-2	25,500	2018	
1	ATS/3	25,500	2020	
1	riStar			
Value	e Creation is one of several companie	s to be impacted by the Alberta	government's pend	ding cancellation of o
	s leases around Fort McMurray.			
_	Pilot	840	2014	4,500,000
IND	USTRIAL HEARTLAND	REGION - UPGNA	HER	
NOR	TH WEST UPGRADING INC.			
	ledwater Upgrader			
deep	partners say that construction activity undergrounds, foundations and preli- ess building. Engineering and procure ess units targeted to be completed by	minary piling. The metal skin has ment activities continue, with av	also been installed	f for the first non-
	hase 1	50,000	2016	
p	hase 2	50,000	IBD	
p	hase 3	50,000 50,000	TBD	Approal
P SHE	hase 3 LALBIAN SANDS			Approved
P P SHE Si	hase 3	50,000 says the Athabasca Oil Sands Pr	TBD oject has recently s	
P P SHEL Si Minor	hase 3 LALBIAN SANDS cotford Upgrader 1 rity partner Marathon Oli Corporation	50,000 says the Athabasca Oil Sands Pr	TBD oject has recently s	
P SHEL Si Minor torma	hase 3 L ALBIAN SANDS cotford Upgrader 1 rify partner Marathon Oil Corporation ince due to robust reliability and realiz	50,000 says the Athabasca Oil Sands Phatlons, but is expecting significan	TBD oject has recently s t planned downtime	
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Asphaltenes

The heaviest and most concentrated aromatic hydrocarbon fractions of bitumen

Barrel

The traditional measurement for crude oil volumes. One barrel equals 42 U.S. gallons (159 litres). There are 6.29 barrels in one cubic metre of oil.

Bitumen

Naturally occurring, viscous mixture of hydrocarbons that contains high levels of sulphur and nitrogen compounds. In its natural state, it is not recoverable at a commercial rate through a well because it is too thick to flow Bitumen typically makes up about 10 per cent by weight of oil sand, but saturation varies.

Cogeneration

The simultaneous production of electricity and steam, which is part of the operations of many oil sands projects.

Coking

An upgrading/refining process used to convert the heaviest fraction of bitumen into lighter hydrocarbons by rejecting carbon as coke. Coking can be either delayed coking (semi-batch) or fluid coking (continuous).

Condensate

Mixture of extremely light hydrocarbons recoverable from gas reservoirs. Condensate is also referred to as a natural gas liquid, and is used as a diluent to reduce bitumen viscosity for pipeline transportation.

Conventional crude oil

Mixture of mainly pentane and heavier hydrocarbons recoverable at a well from an underground reservoir, and liquid at atmospheric pressure and temperature. Unlike bitumen, it flows through a well without stimulation and through a pipeline without processing or dilution.

Cracking

An upgrading/refining process for converting large, heavy molecules into smaller ones. Cracking processes include fluid cracking and hydrocracking.

Cyclic steam stimulation (CSS)

An in situ production method incorporating cycles of steam injection, steam soaking and oil production. The steam reduces the viscosity of the bitumen and allows it to flow to the production well.

Density

The heaviness of crude oil, indicating the proportion of large, carbon-rich molecules, generally measured in kilograms per cubic metre (kg/m²) or degrees on the American Petroleum Institute (API) gravity scale, in western Canada, oil up to 900 kg/m³ is considered light to-medium crude—oil above this density is deemed as heavy oil or bitumen.

Dilbit

Bitumen that has been reduced in viscosity through addition of a diluent such as condensate or naphtha

Diluer

A light hydrocarbon blended with bitumen to enable pipeline transport. See Condensate.

Extraction

A process, unique to the oil sands industry, that separates the bitumen from the oil sand using hot water, steam and caustic soda.

Froth treatment

The means to recover bitumen from the mixture of water, bitumen and solids "froth" produced in hot-water extraction (in mining-based recovery)

Gasification

A process to partially oxidize any hydrocarbon, typically heavy residues, to a mixture of hydrogen and carbon monoxide. Can be used to produce hydrogen and various energy by-products.

Groundwater

Water accumulations below the Earth's surface that supply fresh water to wells and springs

Heavy crude oil

Oil with a gravity below 22 degrees API. Heavy crudes must be blended or mixed with condensate to be shipped by pipeline.

Hydrocracking

Refining process for reducing heavy hydrocarbons into lighter fractions, using hydrogen and a catalyst, can also be used in upgrading bitumen.

Hydrotransport

A slurry process that transports water and oil sand through a pipeline to primary separation vessels located in an extraction plant

Hydrotreater

An upgrading/refining process until that reduces sulphur and nitrogen levels in crude oil fractions by catalytic addition of bydrogen.

In situ

A Latin phrase meaning "in its original place." In situ recovery refers to various drilling-based methods used to recover deeply buried bitumen deposits.

In situ combustion

An enhanced oil recovery method that works by generating combustion gases (primarily CO and CO₂) downhole, which then "push" the oil towards the recovery well.

Lease

A legal document from the province of Alberta giving an operator the right to extract bitumen from the oil sand existing within the specified lease area. The land must be reclaimed and returned to the Crown at the end of operations.

Light crude oi

Liquid petroleum with a gravity of 28 degrees API or higher. A high-quality light crude oil might have a gravity of about 40 degrees API. Upgraded crude oils from the oil sands run around 30-33 degrees API (compared to 32-34 for Light Arab and 37-40 for West Texas Intermediate).

Mature fine tailings

A gel-like material resulting from the processing of clay fines contained within the oil sands.

Oilsand

Bitumen-soaked sand deposits located in three geographic regions of Alberta. Athabasca, Cold Lake and Peace River. The Athabasca deposit is the largest, encompassing more than 42,340 square kilometres. Total in-place deposits of bitumen in Alberta are estimated at 1.7 trillion to 2.5 trillion barrels.

Overburden

A layer of sand, gravel and shale between the surface and the underlying oil sand in the mineable oil sands region that must be removed before oil sands can be mined.

Permeability

The capacity of a substance (such as rock) to transmit a fluid, such as crude oil, natural gas or water. The degree of permeability depends on the number, size and shape of the pores and/or fractures in the rock and their interconnections. It is measured by the time it takes a fluid of standard viscosity to move a given distance. The unit of permeability is the Darcy.

Petroleum coke

Solid, black hydrocarbon that is left as a residue after the more valuable hydrocarbons have been removed from the bitumen by heating the bitumen to high temperatures.

Primary production

An in situ recovery method that uses natural reservoir energy (such as gas drive, water drive and gravity drainage) to displace hydrocarbons from the reservoir into the wellbore and up to the surface Primary production uses an artificial lift system in order to reduce the bottomhole pressure or increase the differential pressure to sustain hydrocarbon recovery, since reservoir pressure decreases with production

Reclamation

Returning disturbed land to a stable, biologically productive state. Reclaimed property is returned to the province of Alberta at the end of operations.

Steam assisted gravity drainage (SAGD)

An in situ production process using two closely spaced horizontal wells, one for steam injection and the other for production of the bitumen/water emulsion.

Surface mining

Operations to recover oil sands by open-pit mining using trucks and shovels. Less than 20 per cent of Alberta's oil sands resources are located close enough to the surface (within 75 metres) for mining to be economic

Synthetic crude oil

A manufactured crude oil comprised of naphtha, distillate and gas oil-boiling range material. Can range from high quality, light sweet bottomless crude to heavy, sour blends.

Tailings

A combination of water, sand, silt and fine clay particles that is a by-product of removing the bitumen from the oil sand through the extraction process.

Tailings settling basin

The primary purpose of the tailings settling basin is to serve as a process vessel, allowing time for tailings water to clarify and silt and clay particles to settle so that the water can be reused in extraction. The settling basin also acts as a thickener, preparing mature fine tails for final reclamation.

Thermal recovery

Any in situ process where heat energy (generally steam) is used to reduce the viscosity of bitumen to facilitate recovery.

Upgrading

The process of converting heavy oil or bitumen into synthetic crude either through the removal of carbon (coking) or the addition of hydrogen (hydroconversion)

Viscosity

The ability of a liquid to flow. The lower the viscosity, the more easily the liquid will flow.

CONTACTS

- · Alberta Oilsands
- · Athabasca Oil Corporation
- · Baytex Energy
- BlackPearl Resources
- Canadian Natural Resources
- · Cenovus Energy
- · CNOOC Limited
- · Connacher Oil and Gas
- · ConocoPhillips Canada
- **Enerplus Resources Fund**

- Japan Canada Oil Sands
- **Koch Exploration Canada**
- Korea National Oil Corporation
- Marathon Oil
- Nexen

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- Shell Canada
- · Southern Pacific Resource Corp.

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 - Chevron Canada
- **Devon Canada**
- E-T Energy
- · Grizzly Oil Sands
- Harvest Operations Corp.
- **Husky Energy**
- Imperial Oil
- Ivanhoe Energy

- Laricina Energy
- **MEG Energy**
- North West Upgrading
- N-Solv
- Oak Point Energy
- Occidental Petroleum Corporation
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- · Alberta Enterprise and
- **Advanced Education**
- Alberta Environment and Sustainable Resource Development
- Alberta Innovates
- Alberta's Industrial
- **Heartland Association**
- **Building Trades of Alberta**
- Canada's Oil Sands Innovation Alliance Canadian Association of
- **Geophysical Contractors**
- Canadian Association of
- Petroleum Producers
- **Canadian Heavy Oil Association**
- In Situ Oil Sands Alliance
- Lakeland Industry & Community
- Association
- Natural Resources
- **Conservation Board** Oil Sands Developers Group
- · Oil Sands Secretariat
 - Petroleum Technology Alliance Canada

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